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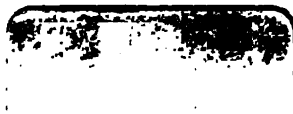
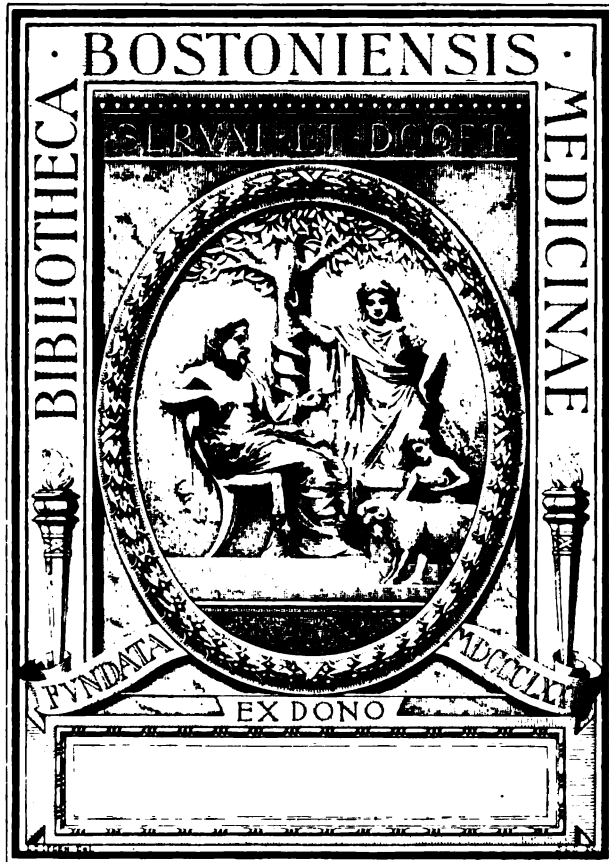
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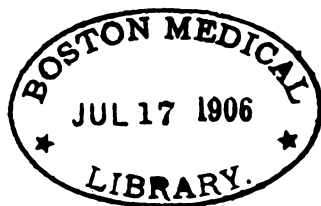
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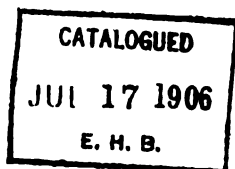
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JOURNAL OF INSANITY

SUGGESTIONS AND PLANS FOR PSYCHOPATHIC WARDS, PAVILIONS AND HOSPITALS FOR AMERICAN CITIES.¹

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While Germany is supposed to furnish us examples of psychopathic hospitals, it is well to remember that many of her greatest cities have only psychopathic wards in general hospitals, which are very poorly equipped, serving largely for detention pavilions and quite inadequate for modern psychiatric purposes. From such hospital wards clinical material is drawn for illustrating lectures in psychiatry at the medical schools, as at Vienna, Berlin and Munich. There are but eight psychopathic hospitals in all Germany, located at Heidelberg, Strassburg, Leipsic, Halle, Freiburg, Würzburg, Giessen and Kiel. They were established in the relative chronological order here given. There are, however, other hospitals planned and in course of erection.

Griesinger framed the first coherent plan for the establishment of psychopathic hospitals in Germany, although the organization of psychiatric wards was advocated as early as 1860.

Scholz established isolation rooms and observation wards in connection with the Bremen general hospitals in 1870, and

¹ Read before the New York Psychiatric Society, January 6, 1904.

Reigers also at about the same date organized a similar provision at Würzburg for 50 or 60 patients; he also suggested the building of smaller state asylums. Fürstner opened the first psychopathic clinic at Heidelberg in 1878, which was built on the block style under one roof. The workings of this clinic in modern psychiatry under Kraepelin are perhaps the most familiar to us. A few months after the opening of the clinic at Heidelberg, Fleischsig opened the second clinic at Leipsic.

The pavilion principle in psychopathic hospital construction, however, was first carried into effect at Halle by Hitzig in 1891, and was an object of special praise by Wernicke and Sioli.

It remained, however, for Somers, of Giessen, to fulfil most completely the practical ideas of Griesinger in establishing a psychopathic hospital on the pavilion plan, independent of a general hospital and with an out-clinic department. All forms of brain disease accompanied by psychic defect or alienation, such as the psychoses of epilepsy, alcoholism, hysteria and the like are received in this hospital and clinic. Still more recently, Semmerling at Kiel has added new details in construction and arrangement in the newest psychopathic hospital of Europe, which was opened for the reception of patients in 1901.

The underlying causes for creating special mental clinics or city asylums in German cities were the same as with us, namely, the urgency of early care of the acute insane, the remoteness of the great country district asylums, and the formality and delay of admissions to these hospitals. Moreover, there was pressing need for public provision for the psychoneuropath, the hysterical, epileptic, alcoholic and borderland cases of insanity not certifiable, yet in need of prophylactic psychopathic treatment. It has been amply proven that observation and careful adjustment of broad principles of treatment to this large class of psychoses and neuroses have resulted in a marked diminution in the demand for so many private sanatoria which, as with us, are only too often impossible for the poor. At Giessen in 1896, 6.5 per cent of the total admissions were not of the class of certifiable insane, and in five years it increased to 23 per cent. Increased attention to this class is very much encouraged for obvious reasons.

Considering Germany as a whole, there are three types of provisions for the acute insane: (1) special wards in general hos-

pitals, as at Vienna, Berlin, Munich; (2) pavilions adjacent to general hospitals, as at Dresden, Cologne and Stuttgart; (3) independent psychopathic hospitals, which are further subdivided into those consisting of the block style of construction, as at Heidelberg, and those of separately detached pavilions, as at Halle, Giessen and Kiel.

A short description of the most desirable provision in Germany for the acute insane may be made here. In 1897 the city of Kiel purchased land for a psychopathic hospital on a beautiful and commanding site overlooking the Kieler-bay, with an elevation of about 100 feet above the sea level. Plans were made in the following year and construction was begun in 1899. The hospital was formally opened for the reception of patients on November 1, 1901. Photographs^{*} were kindly furnished me by Professor Semmerling, director of the clinic, and who is also professor of psychiatry in the University at Kiel.

The character of the hospital construction is on the pavilion or villa plan. The houses are of the country type, made of pressed brick, plastered outside and trimmed with red brick. They are gabled artistically after the old German style. The capacity of the hospital is 139 beds, 23 of the first and second class and 116 of the third class, the latter being similar to our indigent class; the entire cost of the plant was \$310,725, or about \$2275 a bed. An average cost over all of \$3.98 per cubic meter. The daily per capita cost in maintenance is about 55 cents for the third class and 70 to 95 cents for the first class. The hospital is heated by steam from a central boiler plant; the grounds and buildings are lighted by electricity, while gas is used for fuel. The water supply and sewerage disposal are in connection with that of the city proper. The hospital is on the border of new Kiel and one mile from the old part of the town, the university and the railroad station. It is connected by short and long-distance telephone, and has a local system connecting all parts of the hospital. Ventilation is maintained by a system of forced draft by means of which all parts of the hospital are kept at uniform temperature and moisture. The central portion of the main building is given

^{*}Reproduced in a short description of this hospital in the Proceedings of the American Medico-Psychological Association, 1903.

over to administration offices, laboratories, examination rooms, polyclinics, lecture rooms, library and living rooms for the medical officers of the staff. The barracks or the pavilion attached to either side of the administration building serve for reception and observation wards; the villas for the quiet and convalescent of first, second and third class; the ground floor being for the first and second class. Special rooms in this latter house serve for certain types of convalescents, while isolation houses are of course for the noisy and excited cases.

In view of the foregoing provision for the care of the acute insane in Germany, we have endeavored to outline our suggestions for psychopathic provisions for American cities in the three following types of plans which we will consider briefly:

First.—Psychopathic wards in or attached to general hospitals. These are intended for cities of 10,000 to 20,000; the plan consists of a hospital wing of two stories, a ward for each sex. It is merely a suggested interior arrangement, as the exterior and dimensions must be governed by those of the existing building to which the wards are added. Arrangements have been made so as to gain the maximum space for observation or open wards, as it is believed this principle is most convenient for investigation and supervision. The acute insane need open wards and not cell care. That such wards should not be built in connection with workhouses, almshouses or infirmaries, does not need comment. Attention is called to the special arrangements made on the plan for the permanent baths and hydrotherapy. This psychopathic ward provision is similar in many respects to that in operation at Albany, New York. See Plate I.

The second plan is for a psychopathic pavilion adjacent to, but disconnected from the general hospital, in cities of 20,000 to 50,000. In addition to the special features of the psychopathic wards of Provision 1, it has trained resident alienists and nurses, and contains an out-clinic department which should furnish excellent facilities for selection of cases, and aid much in reducing the fear with which the public in general regard such patients. The pavilion is intended to hold cases for a longer period than the ward (Plate I). The ward or pavilion should not be established in too large a city lest too great demand be made on inadequate space, thus forcing a small clinic to serve as a place for diagnosis and certification only, such as has been done at the pavilion at

Bellevue Hospital, New York. Under ordinary circumstances the acute insane may be kept in the ward or pavilion at least six weeks; the average longest time should not be more than four months. In a measure the length of stay may be regulated by the admissions. In German pavilions possessing a resident physician, plenty of reception room and open wards, such as at Dresden, Koenigsburg and Breslau, the ratio of cases received is about 1 to 500 of the total population, while with limitation in these requirements, as at Bremen and Dortmund, the ratio is about 1 to 1000. The manner of admission of insane cases to all three provisions might be somewhat similar to that in Germany, where the cases are voluntarily committed or remanded to the hospital by a city magistrate, pending examination. A formal insanity certificate is only executed in transferring cases from the psychopathic hospitals to the large state asylums. If the large state hospitals are adjacent to the cities, the pavilion may be formed as an adjunct to such hospitals, as in New York State. We must bear in mind, however, that for obvious reasons, many desirable advantages for receiving acute and borderland cases of insanity, and many psychoses not certifiable, must be sacrificed, if psychopathic wards are attached to state hospitals, instead of general hospitals in the cities which the state hospitals approximate. See Psychopathic Pavilion, Plate I.

The third and most desirable provision: The psychopathic hospital should have a separate and independent existence. Other things being equal, it should not be more difficult of access than a general hospital. In view of this fact we have adhered to the pavilion plan of detached cottages or wards which will cover approximately but $5\frac{1}{2}$ acres of land. There is hardly a city in which the pavilion plan outlined in this paper is not possible excepting in New York City. An adaptation of the psychopathic hospitals in block plan, as already in pavilion type, might be made for New York City, where of necessity the ground space for buildings must be very limited and costly. The administration might remain the same with accessory wings. The out-clinic department could be placed in the basement where most accessible. The wings adjacent to the administration building would be four full stories in height, accommodating 25 patients in each ward floor and arranged in the following order (block arrangement):

First floor, reception wards, men and women.

Second floor, isolation wards, men and women.

Third floor, convalescent wards, men and women.

Fourth floor, nurses and roof gardens. See Plates XII, XIII and XIV.

The psychopathic hospital should serve for reception and certification, and all practical needs of a public hospital. It ought not to contain more than 150 to 200 beds. If cities are so large as to require more accommodation, two or more might be established, as is contemplated in London.

PAVILION PLAN OF DETACHED COTTAGES.

Our plan is intended to be sufficient for the largest American cities.

The hospital will accommodate the following:

150 patients.

50 nurses, two-thirds of whom will be women.

6 resident physicians.

1 medical director.

And for the accommodation of the above the following buildings have been deemed necessary:

1 administration building for offices, laboratories and out-clinic departments, adjacent and connected to the central administration building.

2 observation wards holding 25 of each sex.

2 isolation villas for the disturbed cases.

2 convalescent villas for quiet and convalescent.

2 cottages for nurses.

1 kitchen, power house and laundry.

1 mortuary and chapel.

1 director's cottage.

1 stable for ambulance and horses.

In all there will be 13 buildings distributed and arranged on about $5\frac{1}{2}$ acres of ground as shown on the general Plate II, and connected by underground conduits as indicated. An explanation of the plan of arrangement in each of the buildings is attached in the legend.

The style of architecture is Spanish in character, and has been

designed with a view to entire simplicity of line and color, as well as in regard to as moderate cost as would be consistent with good construction. An air of repose in design, quietness and unobtrusiveness and general home comfort, has been sought for, without lowering the general fundamental purpose and aspect.

Above the basement ordinary brick will be used, waterproofed exteriorly, and plastered with cement of a dull gray tone, and on the interior Keene's cement or some equally good plaster to be applied throughout. The plastering of exterior walls with cement is suggested for neatness of appearance, and for the possibility of color effect, as a warm gray is cheerful and homelike in strong sunlight, is not cold or forbidding in winter, and lends itself readily to roofs of any color. In the present instance roofs with projecting eaves and covered with red Spanish tile have been suggested, which produces a quiet contrast to the trees and shrubberies. Plates II and XI will explain the points just covered.

The interior arrangement of the hospital permits a convenient classification; open observation wards for acutely disturbed cases; permanent baths for the maniacal; hydrotherapy and electricity and special diets for all cases. Those patients who need to go about a great deal, more than the limited confines of the gardens permit, should either be discharged as sufficiently convalescent to return to their homes for an out-clinic observation and care, or, if still in need of restricted liberty, should be sent to a state hospital. In case of the latter such patients not sufficiently convalescent or discharged might be transferred to a colony which might serve alike for acute, convalescent and chronic cases.

Arrangements have been provided for the clinico-pathological teaching of psychiatry and the necessary laboratories for pathology, chemistry and psychology. It is believed that those studies should be undertaken first in these hospitals which immediately subserve our knowledge of the pathogenesis, treatment and pathology of mental diseases.

PSYCHOPATHIC HOSPITAL.—ESTIMATE OF COST.

The following buildings have been classified under three different types of construction as demanded by their purposes:

A. Complete Fireproof Construction.—To be used in isolation

cottages only; walls to be lined with tile in toilets and baths, and with waterproof plaster; rounded jambs, sanitary base; granolithic floor, together with other usual materials.

B. Wooden Beam Construction.—To be used in convalescent cottages, reception wards, administration and kitchen buildings.

C. Ordinary Construction.—To be used in nurses' buildings, morgue, director's house and stable.

Plumbing.—To be of best vitreous ware in buildings for patients. Fixtures in all buildings to be appropriate to inmates.

Heating.—To be of direct, indirect and direct systems.

Lighting.—To be by electricity throughout, with necessary switches and cut-offs.

Ventilation.—To be by a direct system, with inlets controlled by valves.

Itemized and total cost of buildings is shown in following table:

Building and Description.	Total no. of Patients in Building.	Area per Capita.	Area per Floor.	Cubic feet per Capita per Floor.	Cubic feet in Building per Capita.	Total Cubical Contents of Building.	Cost per Patient in Building Specified.	Cost per Building and Extra.	Total Cost.
1 Administration .....	..	..	7,600	....	....	318,200	.....	\$47,730	.....
2 Kitchen.....	..	..	7,296	....	....	175,104	.....	28,286	.....
3 Reception Wards (2).....	25	237	3,740	2,870	5,385	184,640	\$908.	40,892	.....
4 Isolation Cottages (2).....	25	353	4,240	3,530	6,109	152,640	1221.	61,056	.....
5 Convalescent Cottages (2).....	25	353	4,240	3,530	6,109	152,640	911.4	45,792	.....
6 Nurses' Building (2).....	30	249	3,740	2,870	5,385	134,640	.....	34,532	.....
Note 3 to 6 inclusive are figured throughout on the basis of single buildings, except in cost per building column—where full cost is inserted.									
7 Mortuary-Chapel .....	..	..	600	....	....	15,600	.....	1,716	\$257,283
Average cost for the above on a basis of 150 Patients—\$1,715.20 per Patient.									
8 Conduit.....	..	..	....	....	....	.....	.....	9,676	.....
9 Engines, Dynamos, etc.....	..	..	....	....	....	.....	.....	10,000	.....
10 Boilers.....	..	..	....	....	....	.....	.....	10,000	.....
11 Lifts 6 @ \$600, 10 @ \$100.....	..	..	....	....	....	.....	.....	4,000	.....
12 Superintendent's House (1).....	..	..	....	....	....	.....	.....	10,000	.....
13 Stable (1).....	..	..	....	....	....	.....	.....	8,500	.....
14 Cottages for help (3).....	..	..	....	....	....	.....	.....	6,000	53,176
									\$310,459
Average total cost for the above on a basis of 150 Patients, = \$2,009.70 per Patient.									

Attention is called to the per capita area and cubeage per floor, which in the reception building is more than twice the amount usually allowed, and is more than three times the usual amount in both isolation and convalescent cottages.

A.—This increased area is due to several causes:

1. Cottage type being used instead of regular ward type.
2. The number of baths and space demanded by each group.
3. The maximum of accessory rooms as compared with a minimum number of patients. (These rooms ordinarily suffice for from 3 to 4 times the number of patients allotted herein.)

B.—The cubical contents is also excessive, and is directly due to area, as explained above, and to exceptionally high basements provided throughout all the buildings.

C.—Buildings for nurses are generous to extreme and could be greatly reduced in cost.

D.—Cost of administration building could be lessened 25% by changing clinical department to basement.

Rough estimate of cost per building on basis of 100, 150, 200 square feet per patient is appended herewith.

PSYCHOPATHIC HOSPITAL.

Revised Estimate of Cost.

	Revised Basis of Area.	Area.	Average Cost.	Revised Area.	Total Cubical Contents.	Cost.	Revised Cost.
1 Administration .....	.....	.....	.....	.....	.....	\$47,780.25	\$85,748
2 Kitchen.....	.....	.....	.....	sq. ft	.....	26,285.00	28,365
3 Reception ward (2).....	150	3,740	\$421.00	1,950	70,200	40,892.00	21,090
4 Isolation cottage (2).....	200	4,240	750.00	2,800	98,600	61,056.00	37,440
5 Convalescent cottage (2) ..	200	4,240	561.00	2,800	98,600	45,792.00	28,080
6 Nurses' building.....	100	3,740	858.00	1,500	70,300	84,882.00	17,901
7 Morgue.....	.....	600	.....	.....	.....	1,716.00	1,716
						\$357,288.25	\$168,210

Average cost on basis of 150 patients for above buildings—
\$1121.00 per patient.

DATA.

It has been assumed that there will be in this institution the following:

- a. 150 patients equally divided between the sexes.
- b. 50 nurses, two-thirds of whom shall be women.
- c. 6 resident physicians.
- d. 1 medical director.

In addition to these there will be provision for the housing of those employed in the office, kitchen, laundry and engineering departments.

For the accommodation of the above the following buildings have been deemed necessary:

- a. 1 administration building.
- b. 2 observation wards, each holding 25 of each sex.
- c. 2 isolation cottages, each holding 25 of each sex.
- d. 2 convalescent cottages, each holding 25 of each sex.
- e. 2 buildings (nurses), each holding 25 of each sex.
- f. 1 kitchen, power house and laundry.
- g. 1 mortuary and chapel.
- h. 1 cottage for director.
- i. 1 stable for ambulances, &c., &c.

In all thirteen buildings, which are to be distributed and arranged as will be seen on the general plan, Plate II, and connected by underground conduits as shown.

GENERAL PLAN.—PLATE II.

The situation of buildings permits:

- a. A maximum of sunshine and light.
- b. Direct currents of air.
- c. Direct ambulance and clinical service.
- d. Reception wards in close touch by covered passages with administration building, permitting constant observation of obscure, interesting or unclassified cases.
- e. An underground conduit system furnishing direct kitchen and laundry service to all buildings.
- f. The separation of violent and noisy cases from other types.
- g. Provision of special gardens for the convalescent.
- h. Buildings for the special use of nurses.

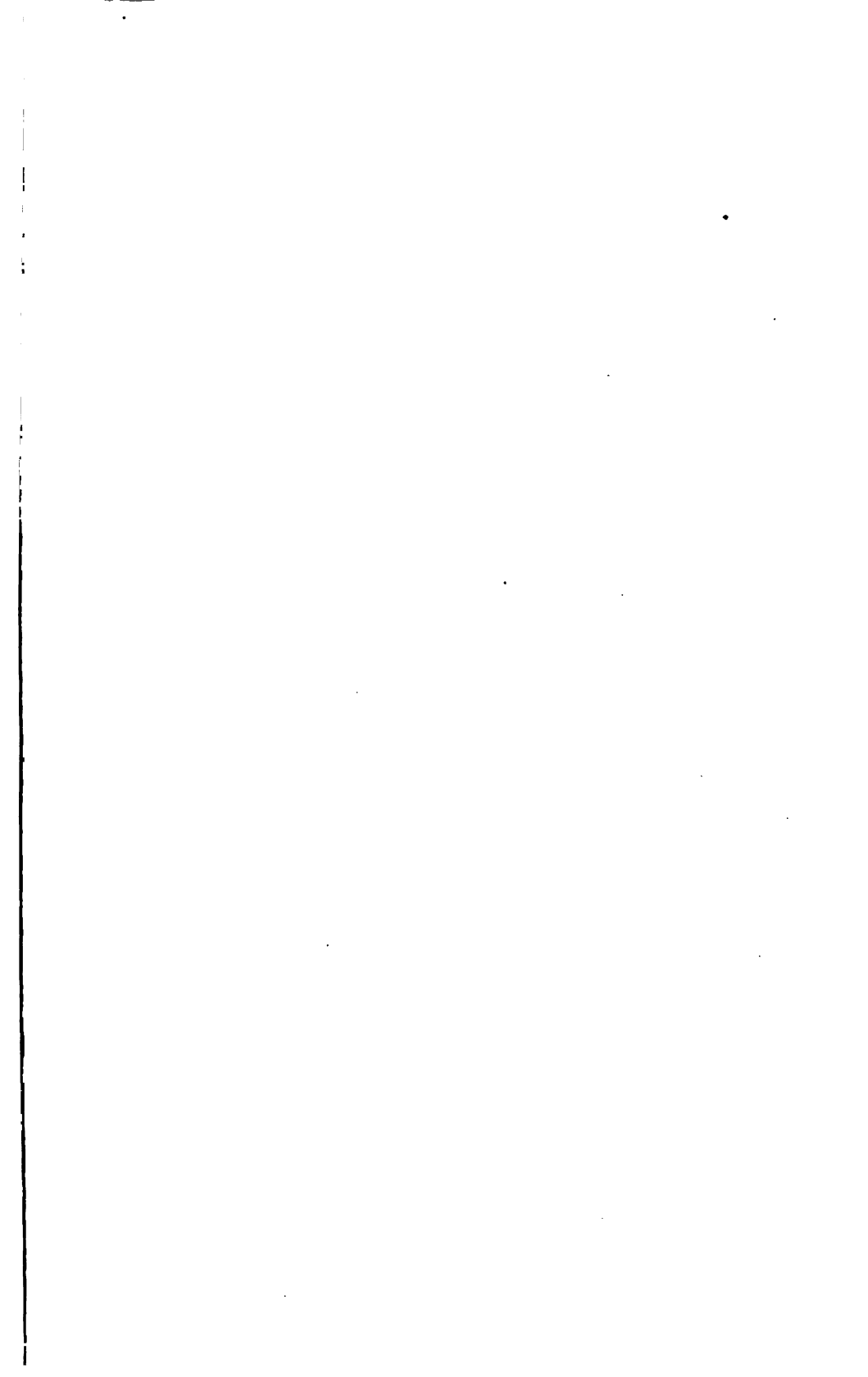
MORTUARY AND CHAPEL.—PLATE II.

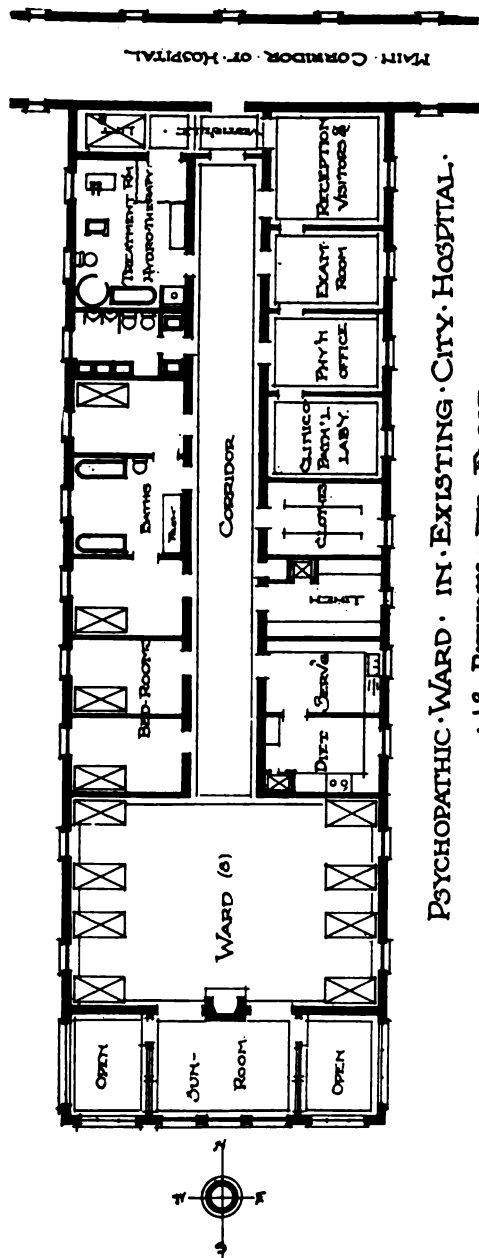
Of secondary importance in a hospital of this nature and therefore situated away from all other buildings, although it is to be connected by conduit with the isolation building.

RESUME.—Attention is called to open lawns between buildings, permitting the erection of tents for contagious diseases if necessary.

STABLE.—PLATE II.

The ambulance service is not of first importance, as would be the case in a general hospital, and it is therefore treated as a private stable for the director's use.





PSYCHOPATHIC WARD IN EXISTING CITY HOSPITAL.

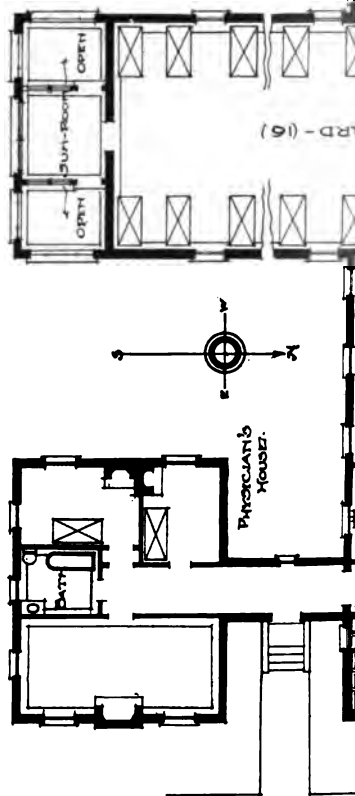
• 12 PATIENTS PER FLOOR.

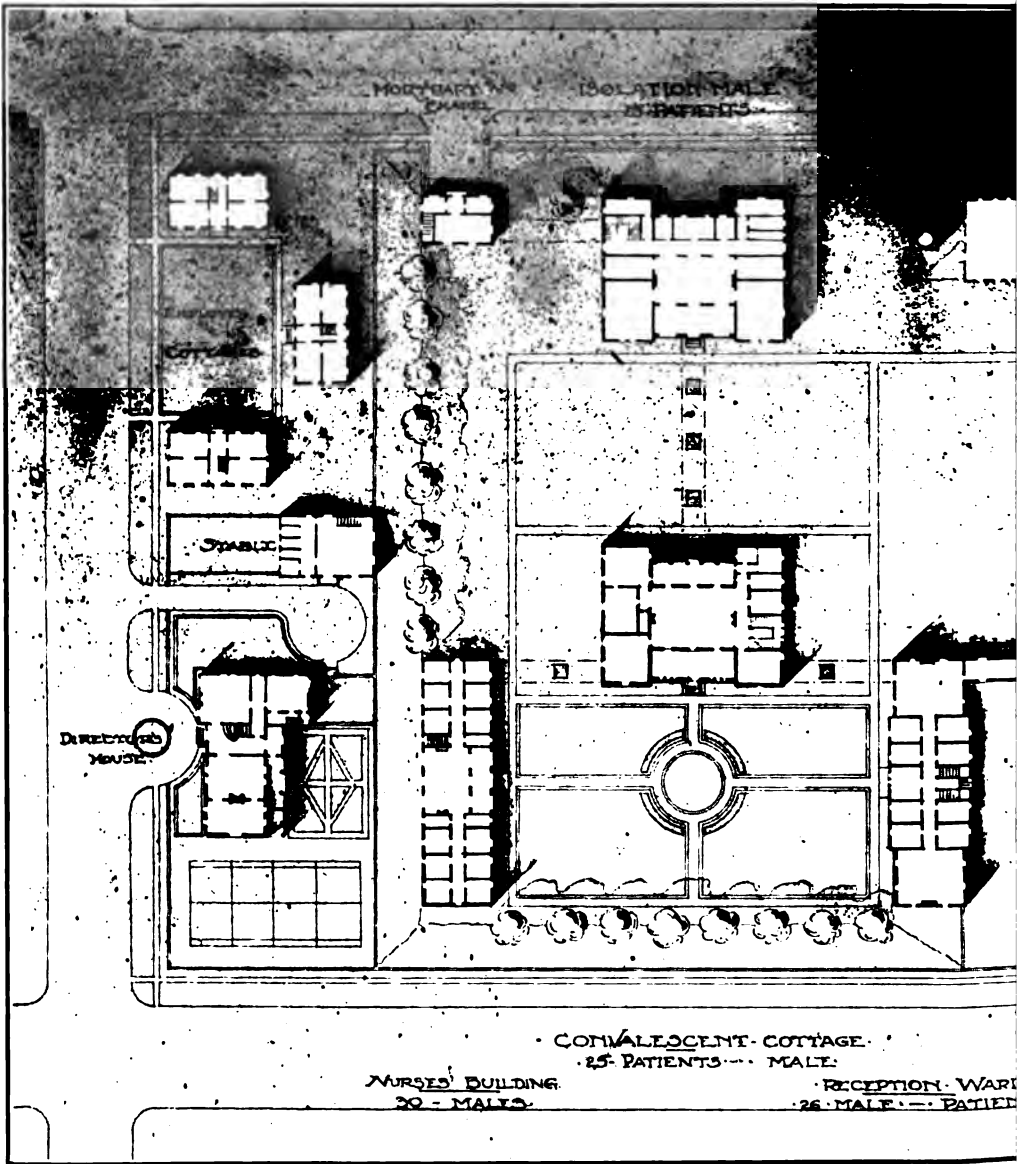
PSYCHOPATHIC WARD.

This plan attached to existing hospital comprises two stories for men and women patients—merely a suggestion of an interior arrangement or disposal of space; all dimensions will be governed by those of building in which this ward will be built.

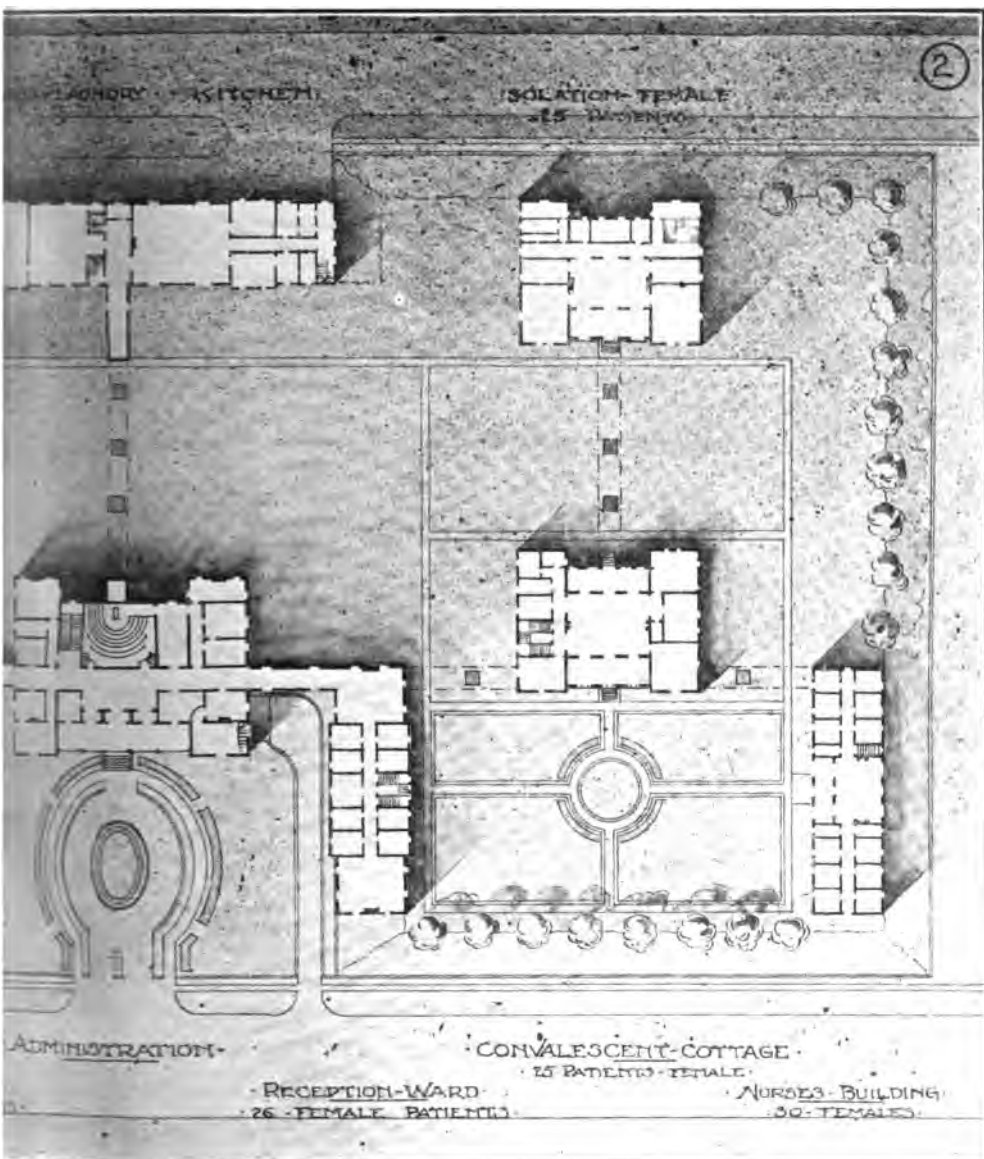
Attention is called to:

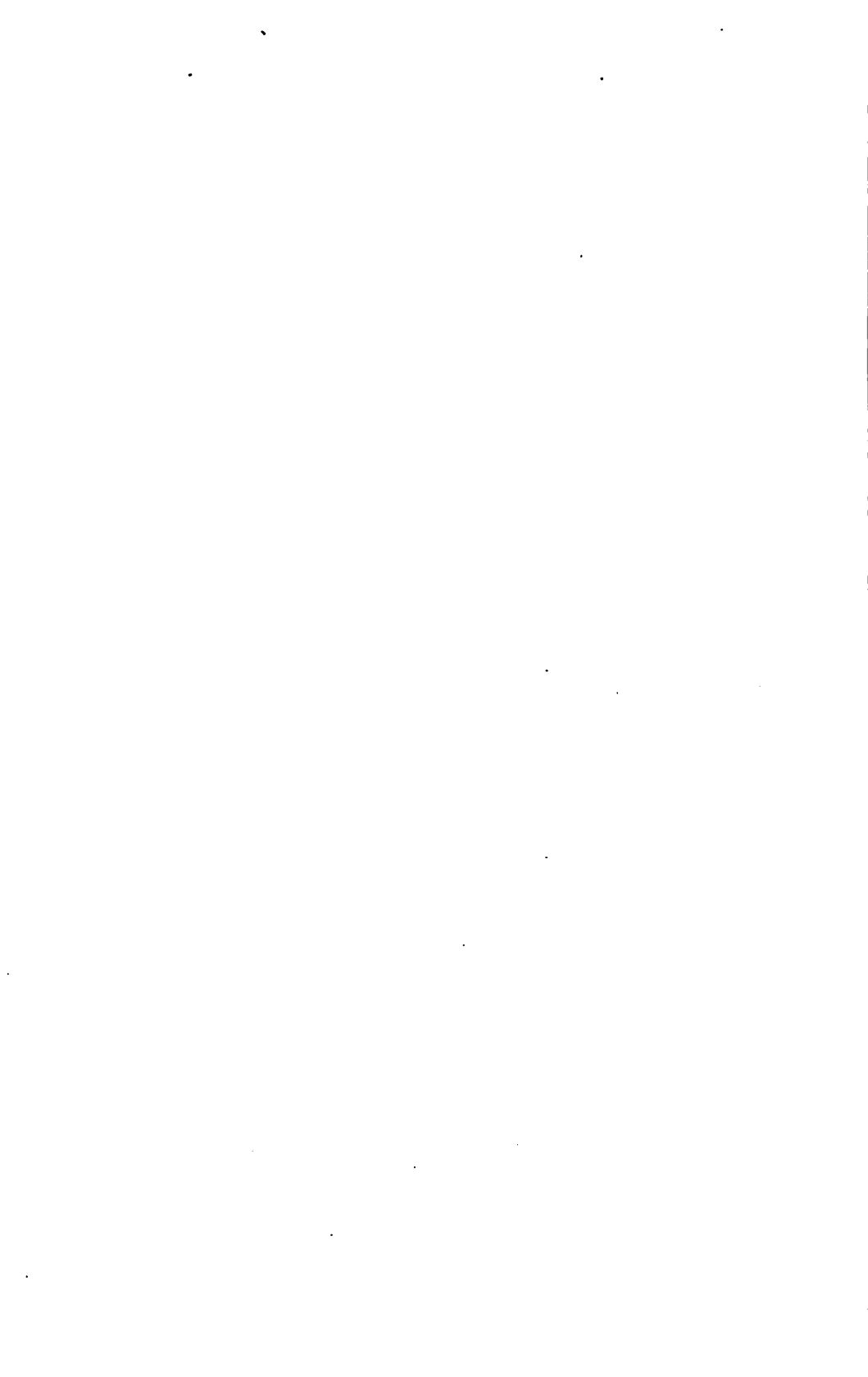
- The localization of hydrotherapy on lower floor with lift accommodation to floor above.
- Centralization of ordinary and permanent baths.
- Sun room at end opening from ward.

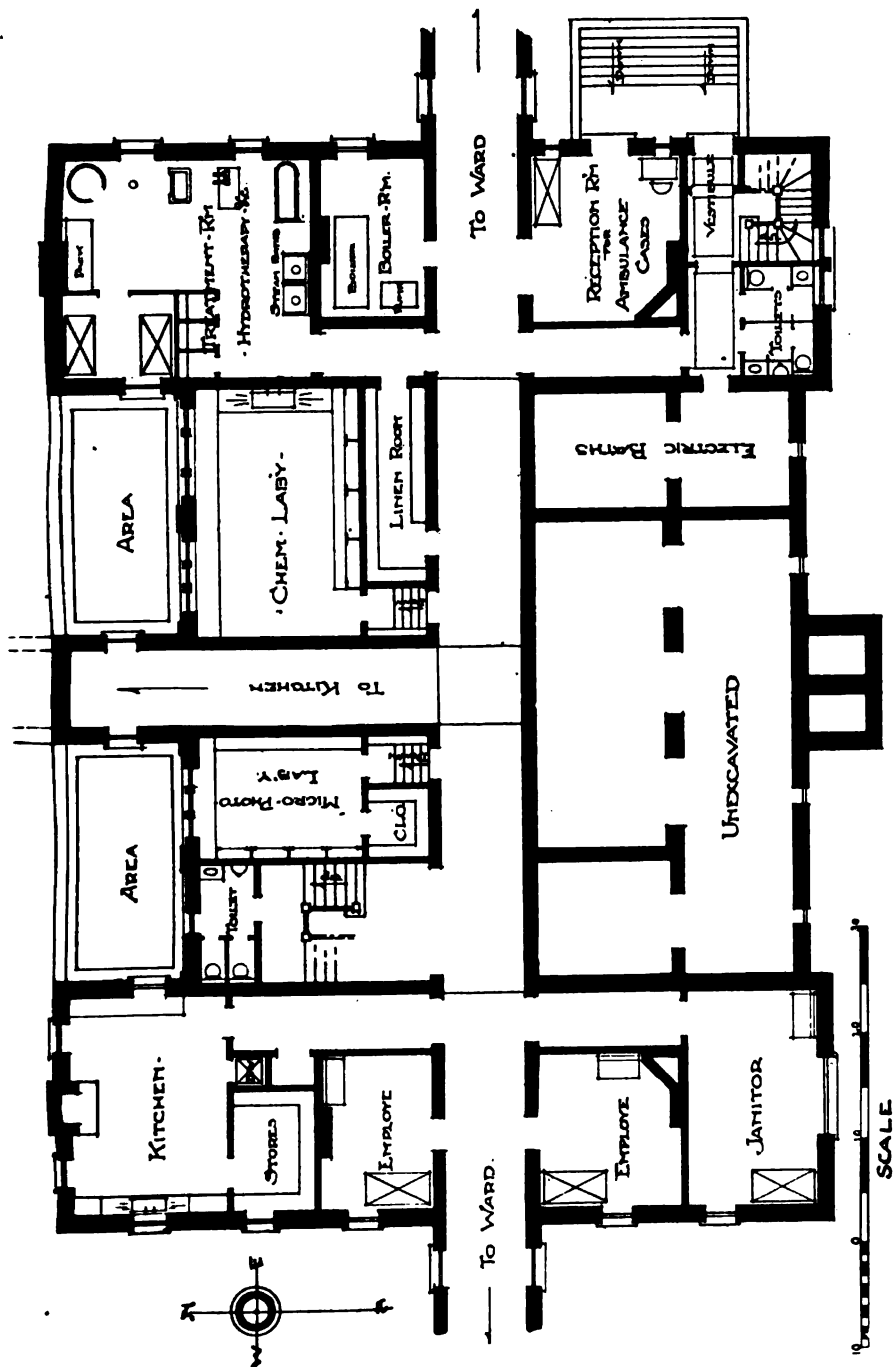




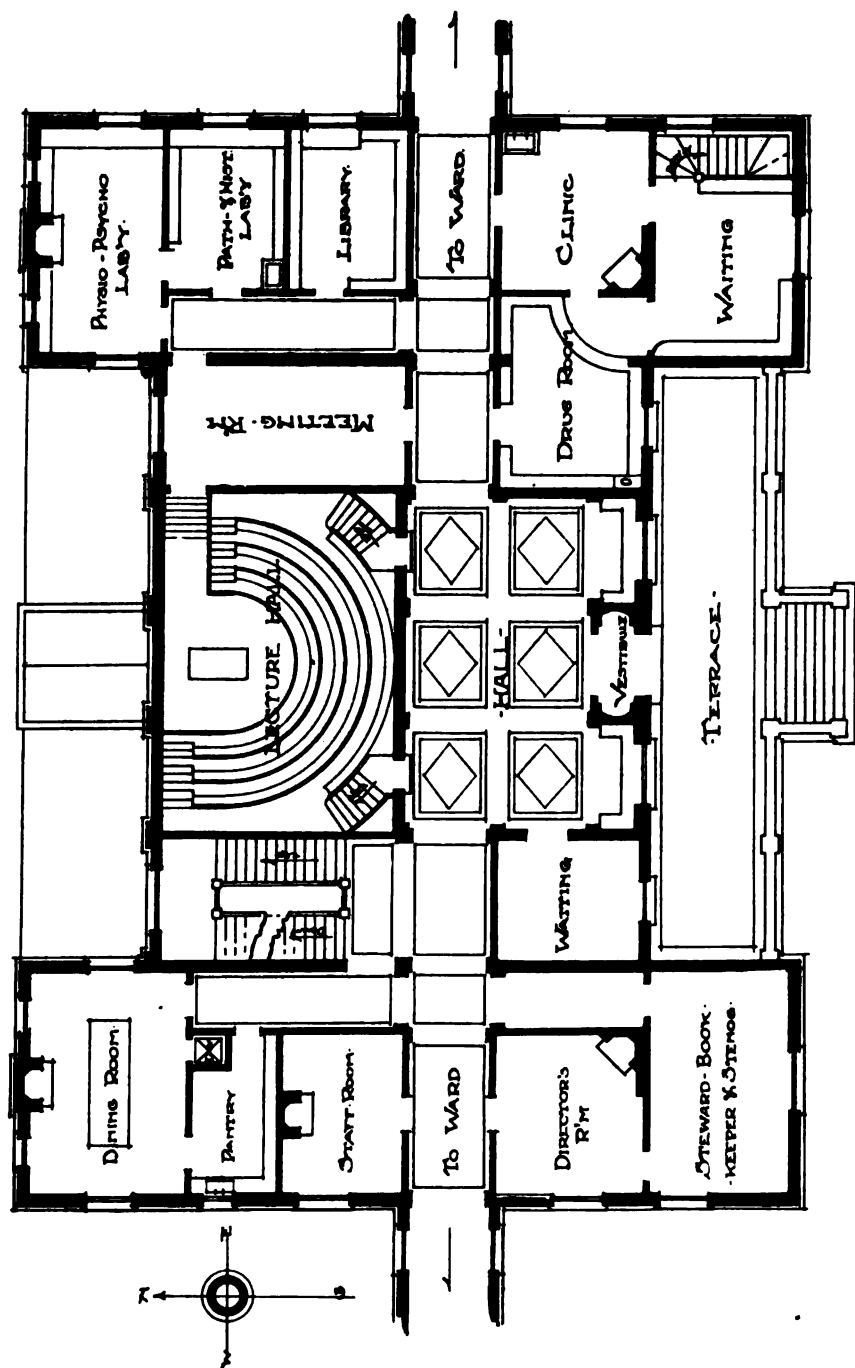
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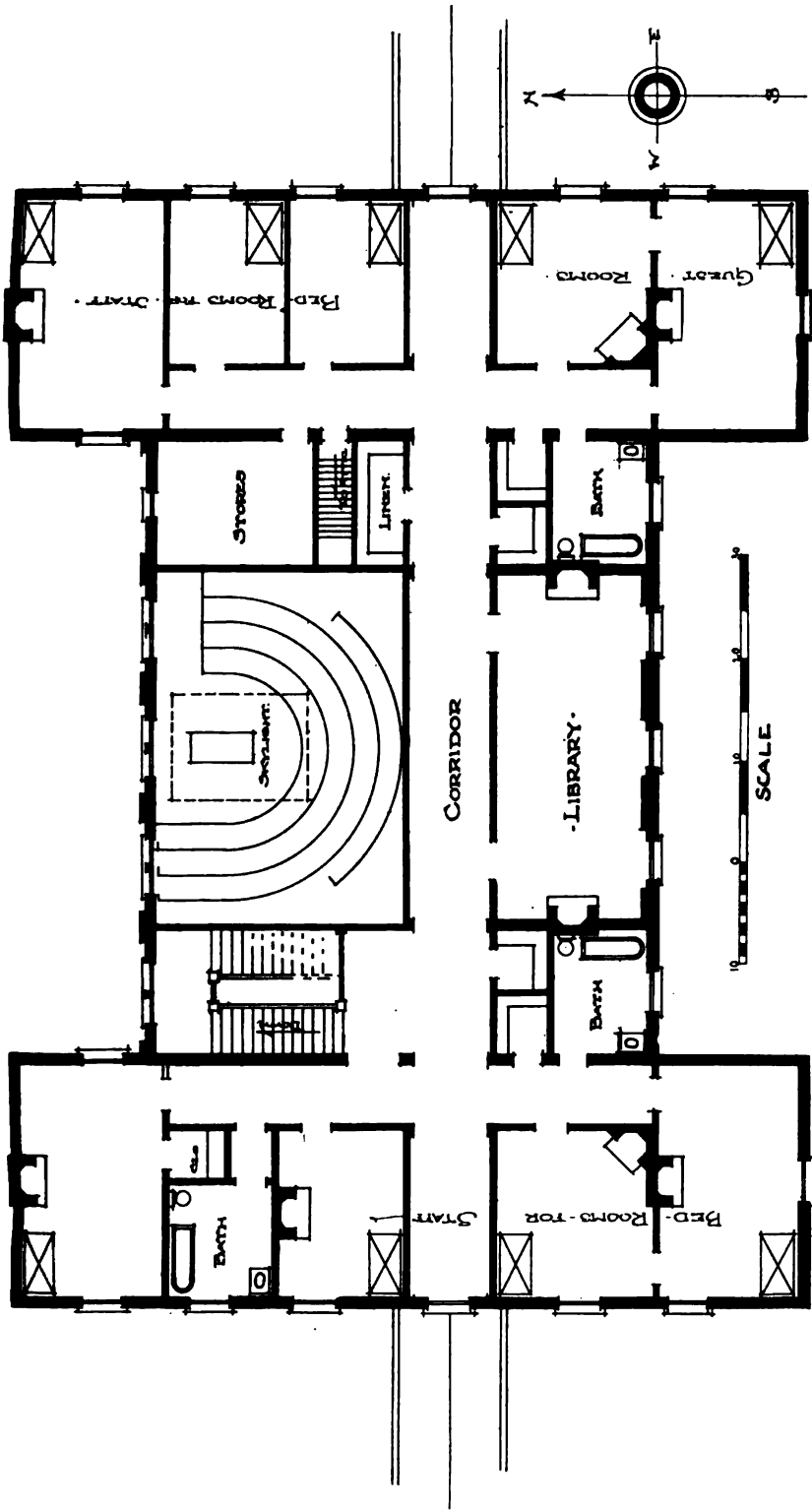
BASEMENT PLAN. ADMINISTRATION BUILDING.



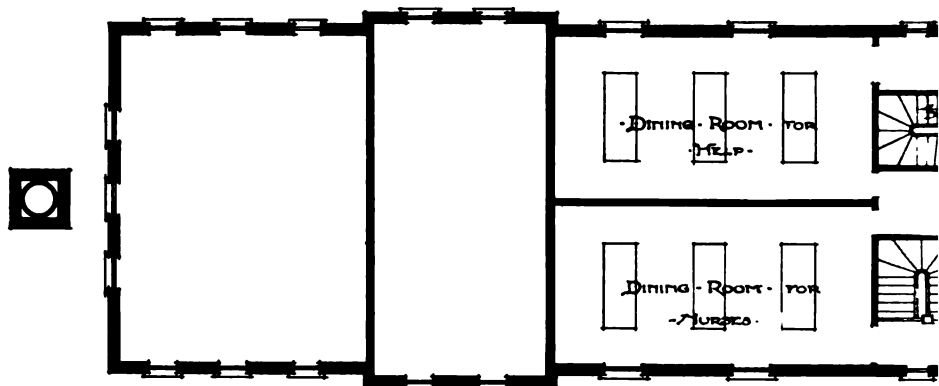
FIRST FLOOR PLAN. ADMINISTRATION BUILDING.

a. Relegation of administration offices, dining rooms, out-clinic department and laboratories to separate wings, with the entrance hall and lecture hall as central features.

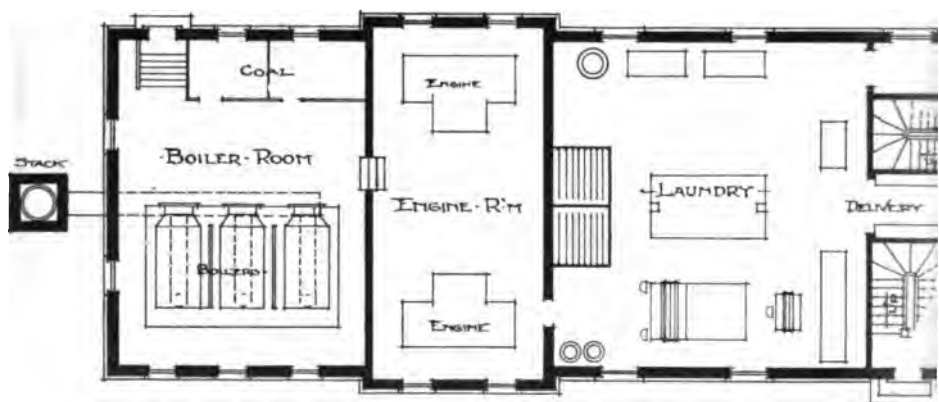
h Privacy of clinic department in connection with the hydrotherapy.



SECOND FLOOR PLAN. ADMINISTRATION BUILDING.



— SEC —

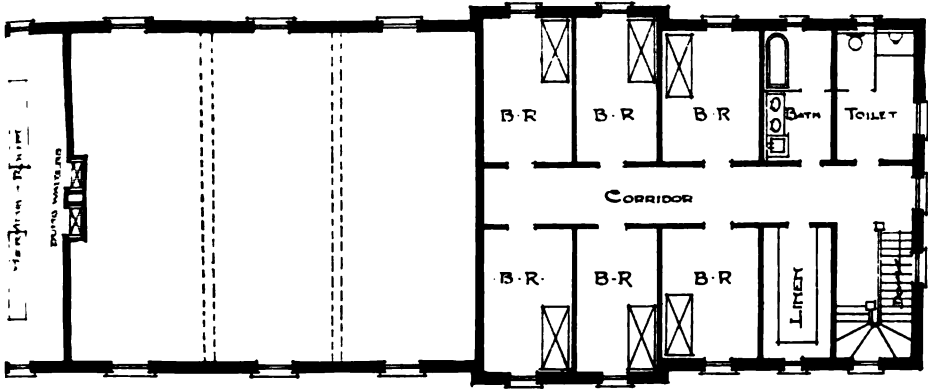


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SCALE

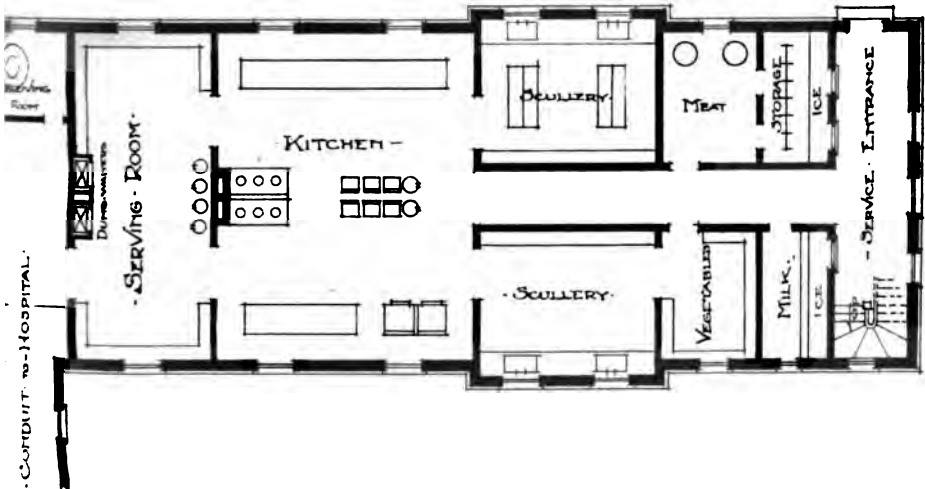
— -GROUND-PLAN of KI

KI

- a. Accessibility of laundry and kitchen, to main conduit.
- b. Close proximity of engine room to laundry, giving
- c. Special dining rooms for servants and nurses.
- d. All facilities for receiving of stores and coal, and their
- e. Accessibility of sculleries.



FLOOR PLAN.

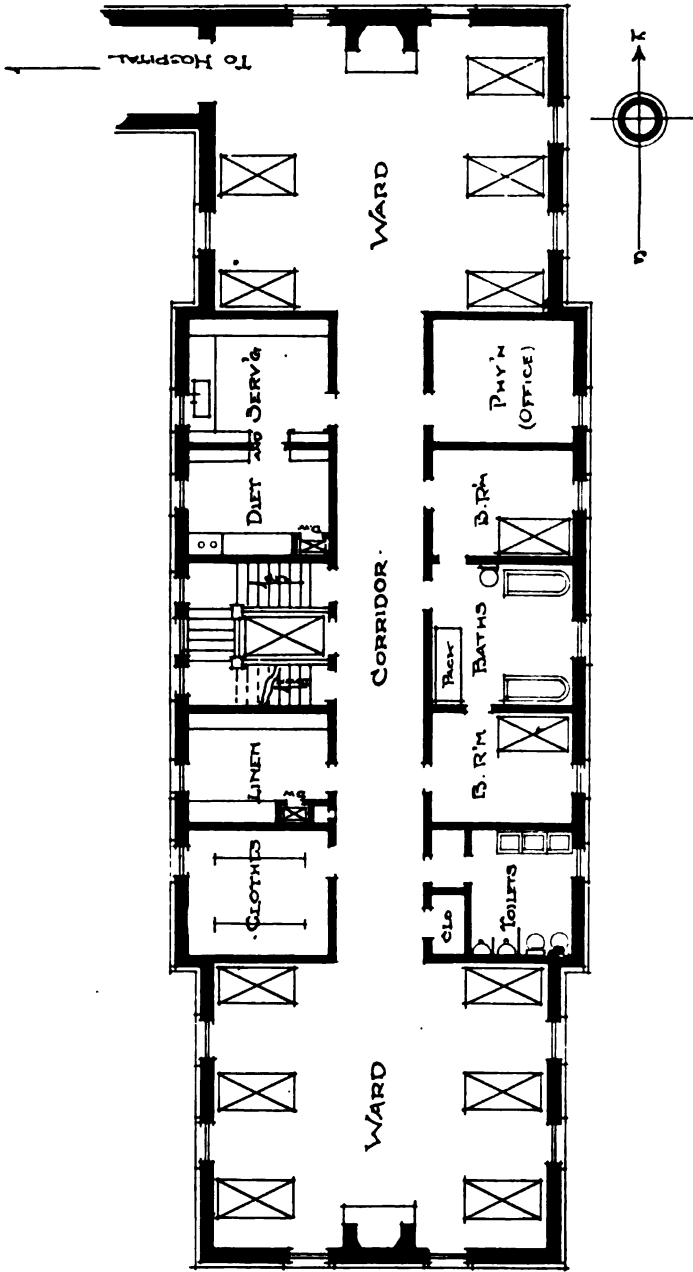


KITCHEN AND SERVICE BUILDING.

EN. LAUNDRY, ETC.

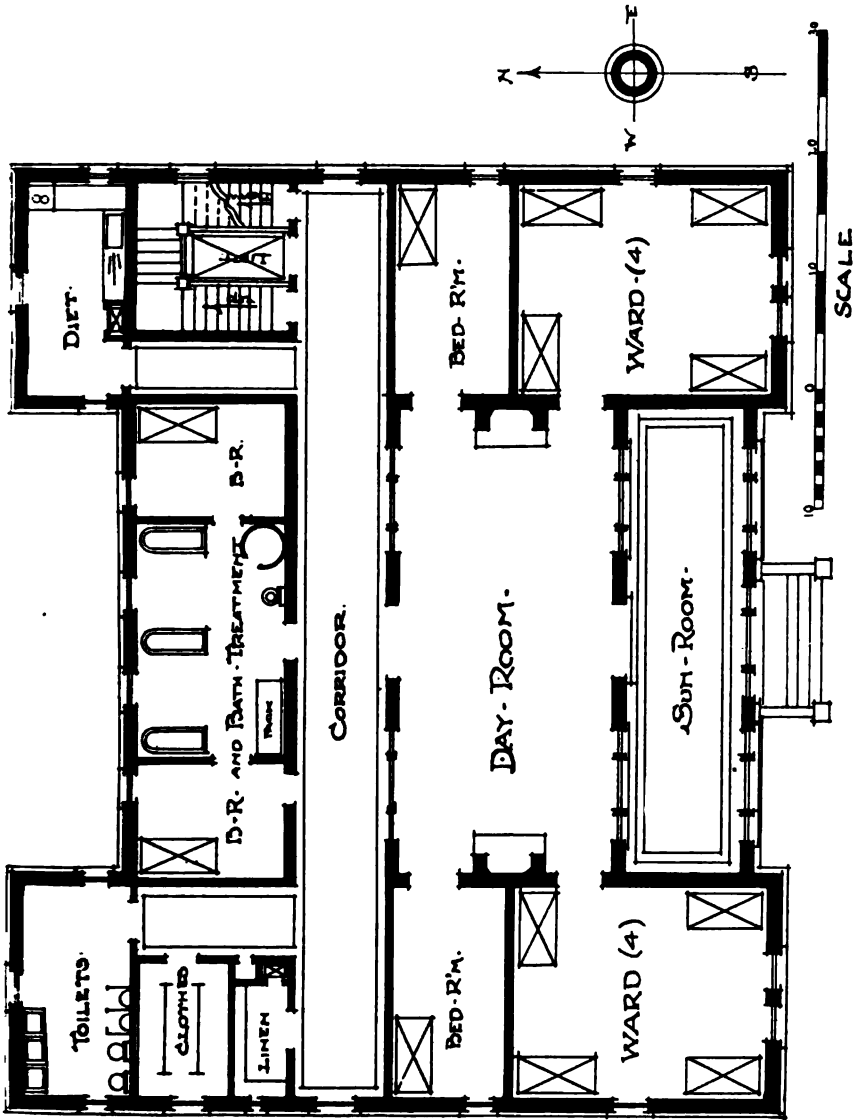
my in transmission of power.

onomical transmission from storage to cooking and serving.



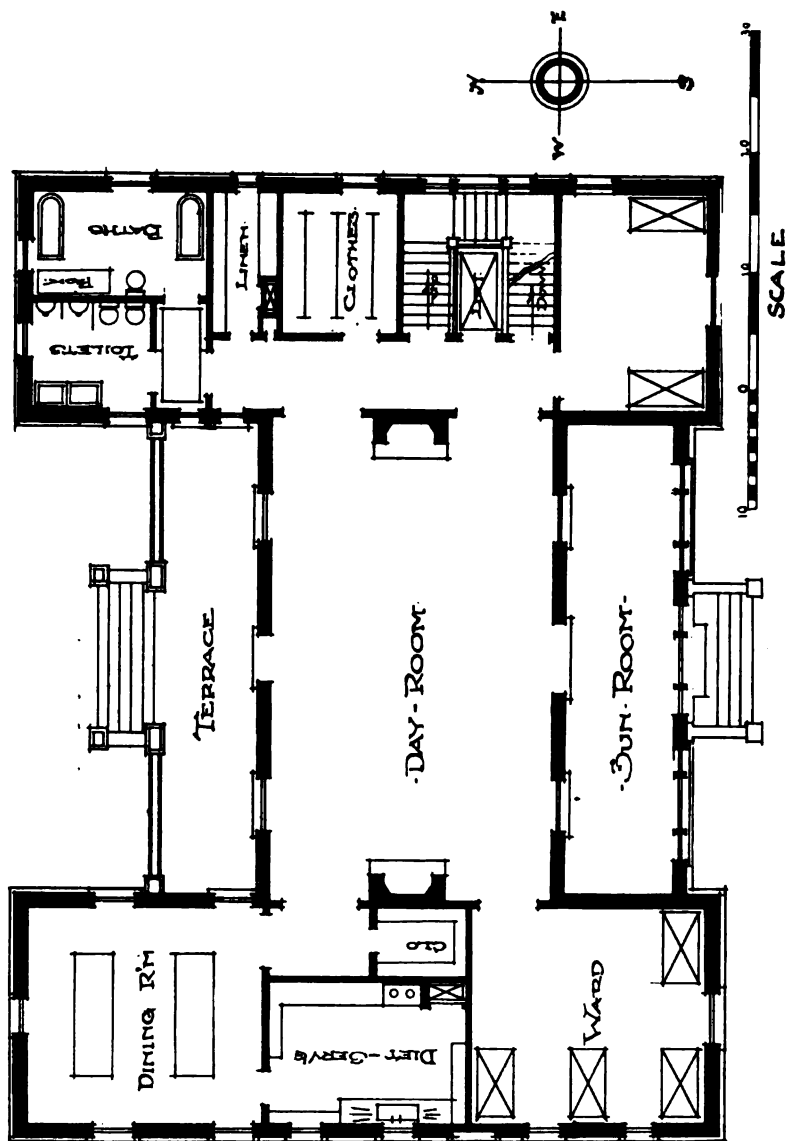
RECEPTION WARDS.

- a. Arrangement of ingress and egress of patients by lift or stairs in center.
- b. Principle of complete baths, water closets and pack table, with adjoining bedrooms.
- c. Small wards, separate, but under easy supervision and control.

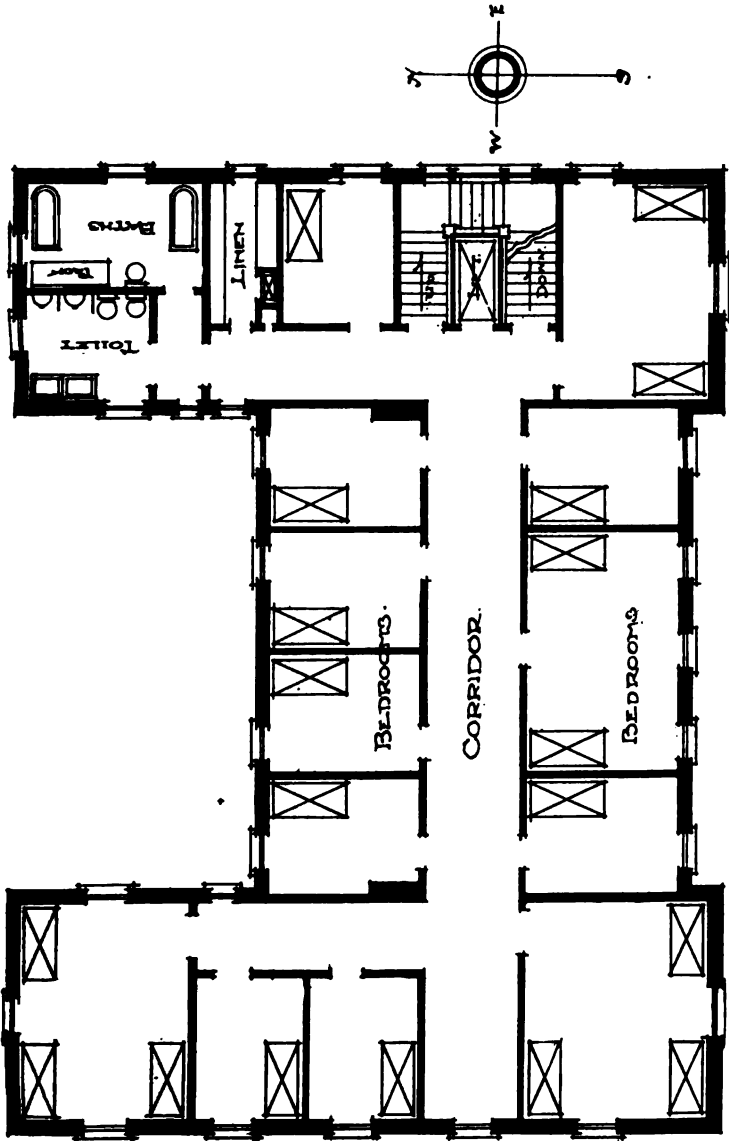


CONVALESCENT COTTAGES.

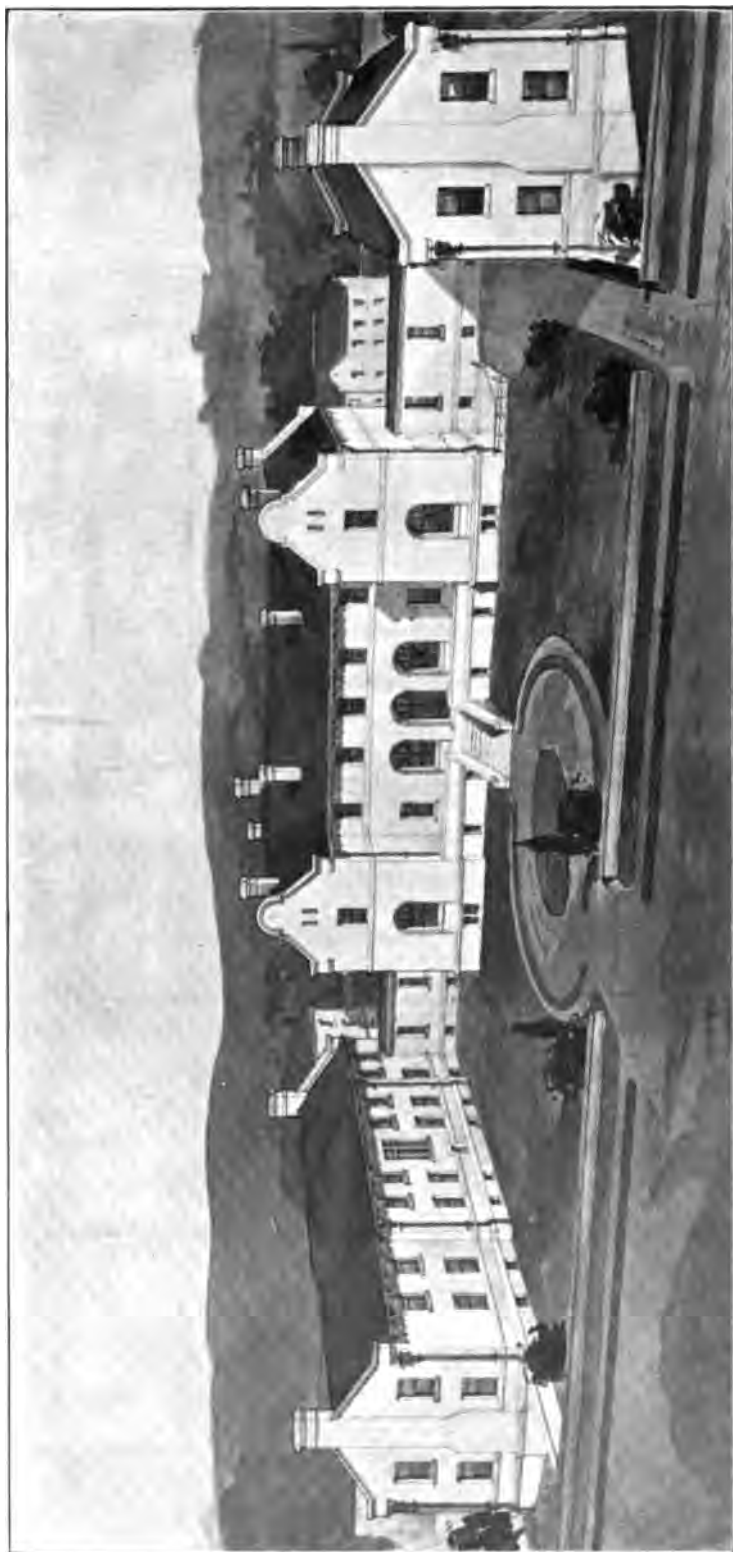
- a. Living rooms and bedrooms on separate floors.
- b. Principal wards adjoining large day room facing south.
- c. Ample porch and sun room.
- d. Entire separation and perfect ventilation of baths and toilet in the northeast wing.



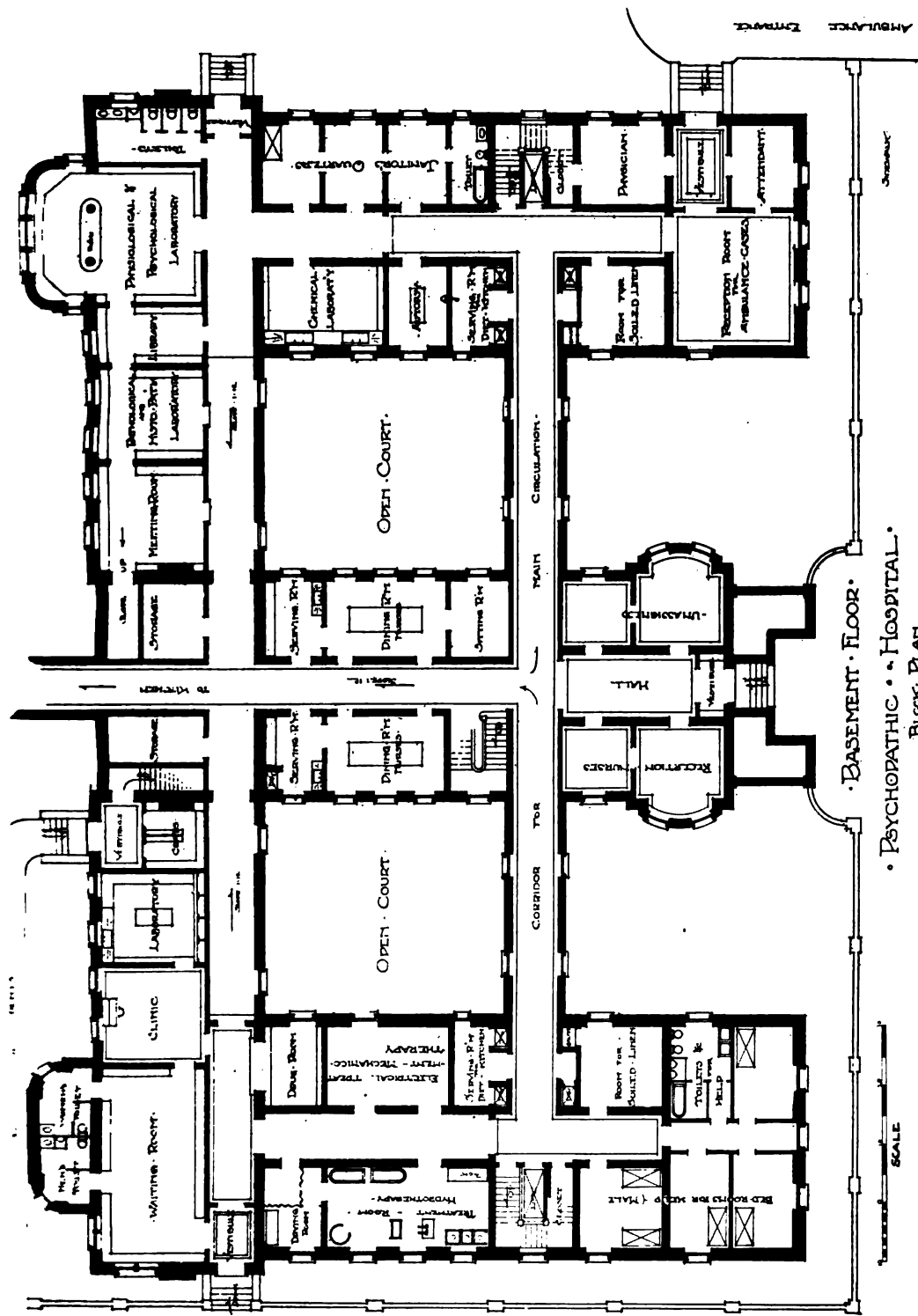
FIRST FLOOR PLAN. CONVALESCENT COTTAGE.

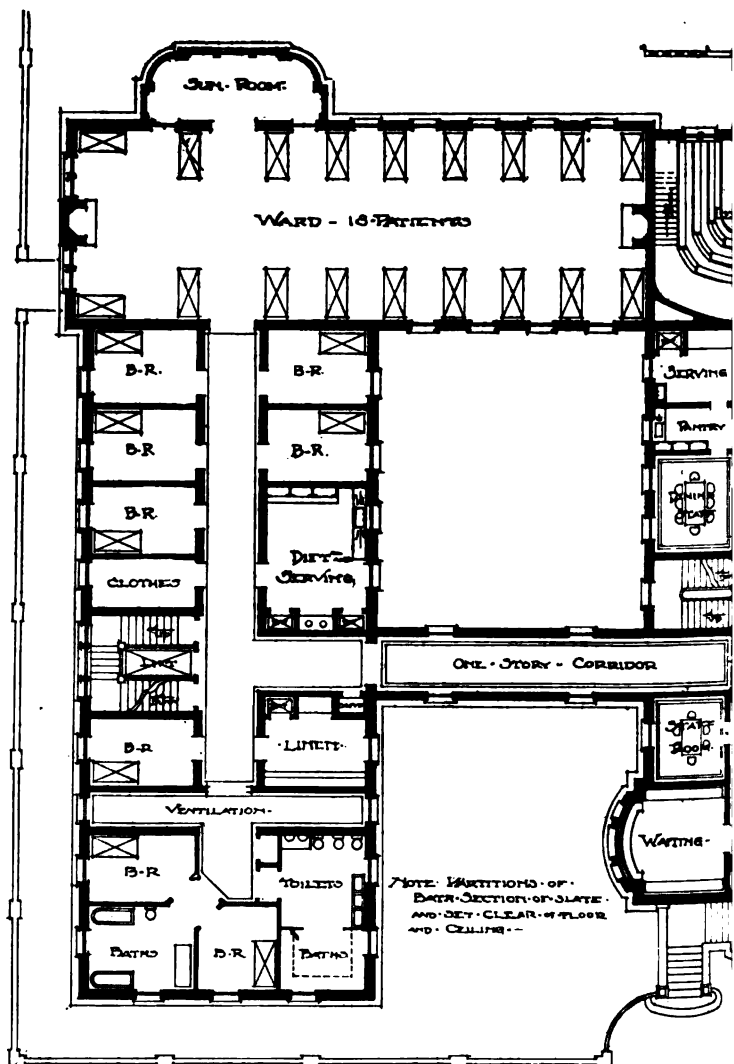


SECOND FLOOR PLAN. CONVALESCENT COTTAGE.



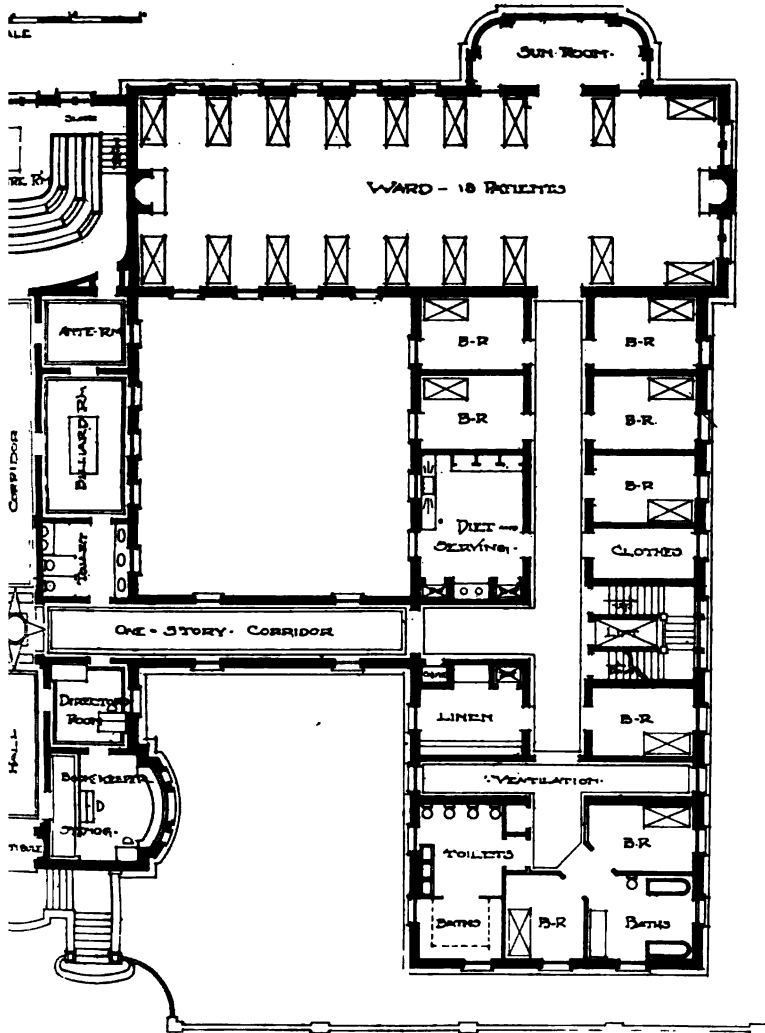
PERSPECTIVE VIEW.





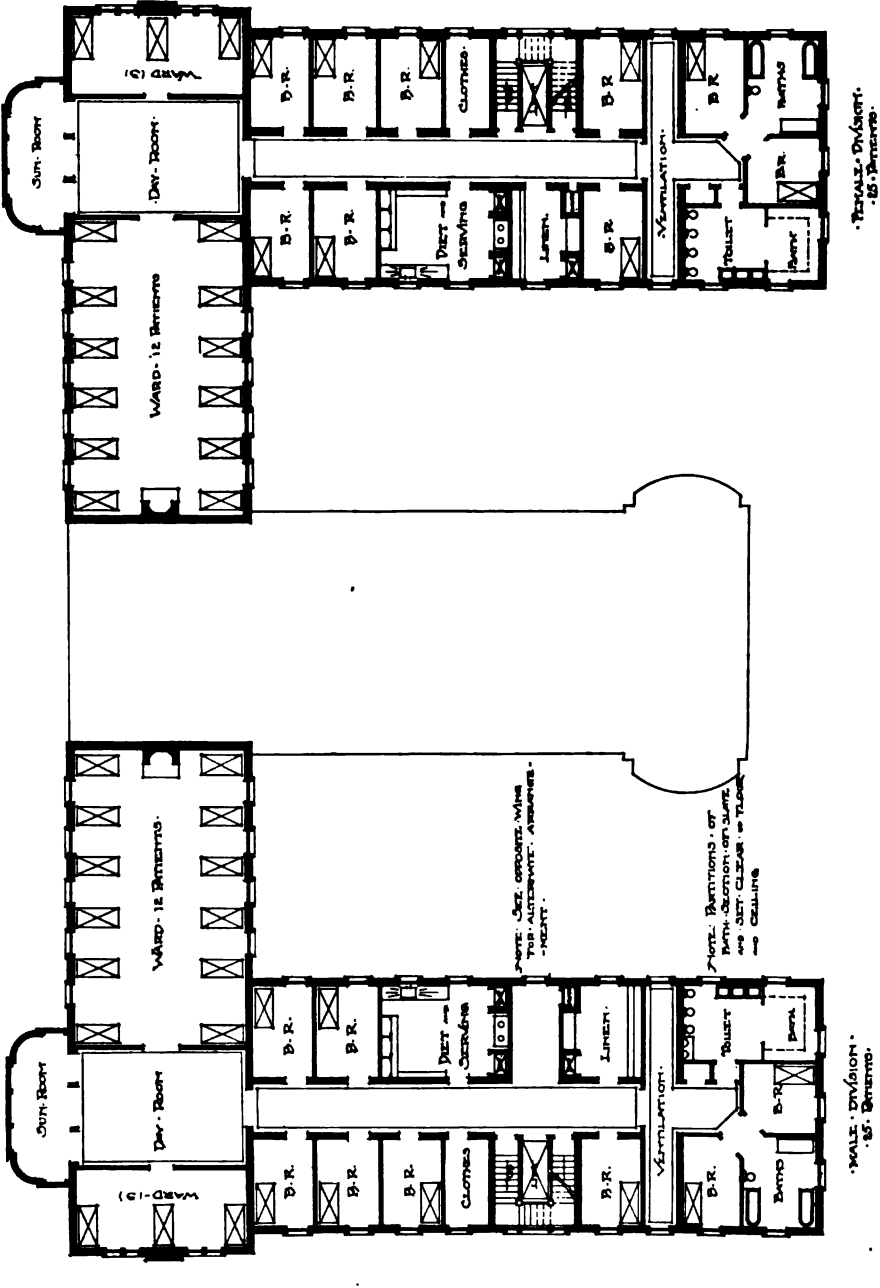
Reception ward for 25 male patients.

FIRST FLOOR, PSYCHOP
NOTE.—Isolation ward



HC HOSPITAL. BLOCK PLAN.
on second floor similar.

Reception ward for 25 female patients.



A CASE OF SYPHILIS OF THE NERVOUS SYSTEM PRESENTING CLINICALLY AN AMNESTIC SYMPTOM COMPLEX, WITH AUTOPSY.

By EMMA W. MOOERS, M. D.

(From the Pathological Laboratory of the McLean Hospital.)

The patient was a man of good education, 40 years old. He was admitted September 9, 1899, and died January 24, 1901.

Heredity.—There was no psychopathic heredity. One sister was said to have died of "quick consumption," but no further history of tuberculosis could be obtained.

Personal History.—The patient has always been capable and physically strong. He had syphilis in 1888, as stated by a relative who is a physician. In 1894 he had a severe convulsion, for which there was no known cause, and there were no known after-effects. He was at work steadily until two years before admission. Since then he had to remain away from work at times, because he was "tired out," "nervous," and "had a poor appetite," but presented no other symptoms. From August, 1897, to the spring of 1898, large doses of iodide of potassium, alternating with bromide of mercury, were given him. His work was done sufficiently well so that he retained his position and responsibility. But gradually his memory is said to have become "a little dulled," so that he "hesitated" and occasionally "got foggy." Three months before admission his gait became "shaky," and a few weeks before admission he had a "sudden attack of dizziness, staggered and groped about like a drunken man." He was brought to this hospital because he presented certain symptoms which were thought to be an evidence of general paralysis, namely, a mild, good-natured euphoria, without, however, any expansiveness or extravagance, and a slight failure of memory.

From September, 1899, to May, 1900, the patient's state may be summarized as follows: He was in good physical condition,

slept and ate well, and was well nourished. His color was good, but the venules of the face and cheeks were somewhat dilated. The visceral examination showed no abnormality. The arteries were soft. No headache was present. The most striking feature was the abnormality of his gait. When made to walk a straight line he had a tendency to deviate, especially to the left, and when turning quickly he had to catch himself. This tendency to stagger towards the left side was frequently noted when he walked in the ward, and during the first few days he fell a few times when getting up from a sitting posture. There was at no time a feeling of dizziness. The gait was distinctly not ataxic, the legs were not raised unduly, and when lying down he described a circle with his foot without ataxia. This condition remained unaltered throughout this period. There was no swaying when standing on both feet with eyes closed, but a decided difficulty in standing on either foot alone. The reflexes were exaggerated, but equal. A transferred adductor reflex was noted when the inside of either knee was tapped; no ankle clonus; a few movements of a patellar clonus. Cremasteric and abdominal reflexes were present. The arms presented no abnormality; there was no tremor of the extended fingers. The face showed persistently a slight one-sidedness; the right angle of the mouth stood a little lower than the left, and the naso-labial fold on that side was a little flatter. The difference was also seen to a certain extent when he showed his teeth, but was not visible on forced motion. There was no tremor of the facial muscles. The tongue was protruded straight, and presented at first a slight, later a more marked, fibrillary tremor. The speech showed no abnormality. The eyes were freely movable in all directions. At an examination in April, 1900, a few rotatory nystagmus motions are noted, which are not mentioned before or after this note. The pupils were at times equal, at times differed in size, usually the right, later the left being larger. The right pupil always reacted to light less well than the left, but the accommodation reaction was normal. The fundus (examination in October, 1899, by Dr. Amadon) presented a slight palish blue color of the right disk. The handwriting showed no abnormality, and the patient wrote well to dictation. Hearing and vision were not

notably affected, although no special tests were applied. Sensation as to rough tests was normal.

The mental condition was only slightly abnormal. The patient showed a mild euphoria, a certain easy-going unconcern; he was unusually effusive, but not expansive. He showed no decided defect of judgment, no dulling of his finer feelings. His memory was not notably affected in a manner that could be demonstrated by any of the usual tests or by any forgetfulness of events from day to day, but the patient himself stated that in his work he had noticed that now and then he would forget things. He calculated fairly well; perhaps this was somewhat slow for his degree of education.

He was given much freedom, showed a tendency to occupy himself much, and worked a good deal in the wood-carving room, where he did good work, which needed some precision in drawing and carving.

This stable condition was interrupted in December, 1899, by a convulsion. He was found lying in his room, and presented convulsive movements of his left arm and leg. This lasted only a short time, and the patient remained drowsy for some hours, but the same evening he again appeared as well as before, and the physical condition was unaltered after that.

In May the patient complained of much nausea, especially in the morning, and frequently vomited on rising; this lasted for two weeks. He lost some flesh and began to look somewhat worn. He began to complain of a dull pain in the forehead and slept rather poorly. The physical signs, noted before, did not alter, however, except that the knee-jerks became rather more exaggerated, he staggered a little more at times, and his speech became somewhat thick, though he pronounced test sentences well, except for a certain thickness, just mentioned. His mental condition altered during this state inasmuch as he became somewhat irritable and fussy, but the change was slight, and in other respects he remained the same. The vomiting only existed for two weeks, and after that time the general physical state improved again. In June the physical signs underwent no further alterations, but mentally he became somewhat changed; he complained of feeling nervous and cried at times without appreciable reason.

On the 25th of June it was reported that the patient appeared confused, was lying down in a strange room, and seemed unable to speak. He was at once put to bed and had an attack in which the whole body is said to have become stiff; this was soon followed by another attack, both being of short duration. When seen after this he was semi-conscious, breathed heavily, the eyes were somewhat deviated, and did not react to light. The arms presented a peculiar lead-pipe resistance. The right side of the face was more relaxed than the left. (This had been the case before.) The patellar reflexes were very active, but there was no ankle clonus. No difference on the two sides. He vomited about twenty minutes after the attack. Soon another convulsion occurred; the eyes and head turned to the extreme left, the right arm and leg became stiff and raised; the extremities of the left side assumed the same position while the head turned back to the median line and became raised from the bed so that finally the patient only rested on the buttocks while the remainder of his body was raised in a tetanic spasm. Soon twitchings appeared and quick flexion and extension movements of body and extremities, while the head rotated from side to side. The whole attack lasted two minutes. After it the same lead pipe resistance was noted in the arms. He remained unconscious until the next day.

When seen on the afternoon of this day (June 26) he was conscious but somewhat dull, and said he felt sleepy. He answered questions quite readily, however. The feature which struck one at once was that he did not know the nurses and physicians and did not know where he was. The physical signs were not markedly altered; there were no signs of palsy about the extremities, the face was not more one-sided than it had been before, but the tongue deviated a little to the right, the grips were equal, and strength in the arms was good. The knee-jerks were rather less active than before, but there were on both sides a few movements of an ankle clonus. Pin-pricks were perceived on both sides equally well. But the striking alteration which the attack had left behind was a *left hemianopsia*. This was present on the next day, but could no longer be demonstrated five days later. Another striking feature noted at this time was that for some days he frequently spoke of red ants crawling about on the white sheet,

or of seeing red letters; and when the ice was brought to him, he would at first not take it because, he said, it was red.

From the time of this convulsion his mental condition was entirely changed. He was somewhat duller; above all, his memory for recent events was profoundly altered, so that he could not retain impressions for any length of time, while his memory for old events was less interfered with. He was consequently totally disoriented. To a certain extent he fabricated. But in spite of his confusion he retained his politeness, and in general there was no breaking up of the personality, such as one sees in general paralysis, for example. This condition remained essentially unaltered for the remaining seven months of his life, although certain variations were noted.

More in detail, his state was as follows: The patient was often quite alert, but his condition varied considerably in this respect, and at times he appeared quite dull, so that it was somewhat difficult to attract his attention. Often he was orderly enough and did as he was told and was tidy, but at times would urinate on the floor and mix up his food. He was never in any way excited. He remained, when more alert, uniformly polite, grateful for what was done for him, and jovial. He was very rarely irritable, but at times somewhat emotional.

From the very beginning, as was stated, he was disoriented and rarely had any idea where he was; sometimes he thought he was in a hotel, and wanted to be shown to the elevator, or said he was going to leave on the next train; again, he thought he was in a club, or on board ship, or in various towns, or in another hospital. It was noted that when asked where he was, he often gave different answers during the same visit. Thus on one occasion, when he stated that he was in A. and was told that he had been in the McLean Hospital for two years, he said with evident emotion, "You don't say so! I thought I could go to work to-morrow. I had no idea I was so bad;" but the next moment he said he was in M. and had come down "yesterday from K. after closing up the house there for the summer." While he always knew his people when they came, he did not know the physicians or nurses. A few times, however, he greeted the physicians as doctors, but had no idea what their names were; once, when his legs were examined, he said, "They are the same

old legs you have examined before," but he did not know the physician's name, nor when he had examined him before. Usually when one entered he greeted one with a jolly "Hallo, Bill," or "Hallo, Fred, it is awfully good of you to come," or, "Are you going to the house?" His time orientation was almost constantly very poor; he would ask for breakfast in the evening, or say it was 8 p. m. when it was morning; and after a visit of an hour, for example, said, when asked how long the physicians had been with him, "For four minutes." Frequently he seemed unable to retain an impression for even the shortest time, as has already been indicated above. Immediately after dinner he would ask if he was going to have something to eat soon; or after a visit he would have completely forgotten that anyone had been to see him, and when the physician re-entered his room a short time after the visit, he would again greet him as if he had not seen him, and call him again by a new name. Perhaps the most striking example occurred when his sister visited him one day. He happened to be restless and walked up and down the hall; every time he passed her and his eyes fell on her he greeted her effusively, saying that he was glad she had come, as he had not seen her for a long time. Or, on another occasion, he opened the window, and when told not to do so, he apologized and put it down; but when he again walked towards it, he again opened it, this being repeated a number of times.

To a slight extent he fabricated incidents, which, according to him, had happened lately. It has been stated above that he once said he had the day before been in K. closing up the house. Again, he talked about people who had seen him "yesterday," or spoke of having "worked hard yesterday," and consequently feeling out of sorts "to-day," or he told us he was sorry to go away, but had promised his brother he would see him before he went back, or spoke of the presidential party which had come here, and that we were at the president's electoral headquarters; or, one day when found in bed, he said he had just come down here to look at the place with Walter P., and finding it such a nice place he had turned in, etc., etc. But these fabrications were never elaborated nor extensive. His memory for old events was better. Thus, to give some samples, he was able to give the year and day of his birth, the place where he was born, where

he went to school, what college he went to, what business he had been in; or, for example, could give the direction he would take in going from the Union Station in Boston to the State House, although he was unable to give the names of the streets; but, to give some other examples, he gave only approximately the year of the Civil War; knew, however, who was President then, but not who followed him, etc. He calculated rather poorly when any thinking was involved, as was the case in subtraction. When given a paragraph to read he was unable to give the gist, but remembered a catch-word.

His physical state gradually underwent certain changes. He had a few short, very transient convulsions with general twitching, but these left no immediate sequelæ; it was also noted that at times he showed some twitching of his muscles while he was asleep. His gait became worse in August, 1900; he walked very poorly one day and fell a number of times; yet it again improved, still remained more tottering and uncertain than it had been, but the muscular strength was not interfered with; the reflexes were equal and decidedly exaggerated, and ankle clonus again appeared. Babinsky not mentioned. The innervation of his face did not change markedly; frequently it is noted that the right side of the face (lower facial branch) was somewhat less innervated than the left, but this was at no time marked and did not become more accentuated. The tongue deviated slightly to the right on several examinations. The speech became noticeably altered; it was slightly thicker after the attack on June 25th; a note of the latter part of November states that it had lately become decidedly thicker, so that the sibilants especially were pronounced poorly, but he repeated test phrases well with that exception. This did not further alter till his death. His pupils varied in size, sometimes one being larger than the other, and the light reaction became sluggish in the left also. His eyes always remained freely movable. Hemianopsia, often tested for, was not again observed. But the note of December 8th states that both visual fields appear contracted, there being, however, no difference between the two sides. The test was made by holding the hands up at the sides of the patient's head, while he was asked to grasp them; it was usually necessary to bring them further towards the median line than normally.

His hearing was interfered with. In the beginning of August it was for the first time found difficult to make him understand questions, and the watch was heard in contact only, but was heard more distinctly on the left than on the right side. He said, "I can't distinguish all you say unless I see your lips;" and this was verified by tests. Frequently he understood words which had a similar sound to the ones spoken. This difficulty in hearing was only marked to such an extent at a few visits in August, though he always retained a slight difficulty which varied somewhat in intensity.

In December he began to have some trouble in urinating; he seemed to have marked difficulty in starting the stream, but he never had retention. This remained unchanged to his death.

The general physical state was moderately good. He did not lose weight to any extent, but throughout the period from June to his death he had at times a few days during which he had frequent vomiting spells, and had to be kept on a restricted diet. He never complained of any headache. On the night of January 23d the patient had a series of convulsions with but short intervals. The head and eyes were deflected to the right, and the right side was especially affected. From 3.40 A. M. to 9 A. M., when they ceased, he had about 70 convulsions. When examined at 10 o'clock his patellar reflexes were rather uncertain, but on both sides an ankle clonus was present; the plantars were not very prompt. There was no difference in his limbs on the two sides. He remained unconscious but had no further convulsions, although during the night his body stiffened at intervals. He vomited a number of times. The temperature was elevated immediately after the convulsion; it rose further to 106° ; the respiration became rapid and finally rose to 50, and ceased at intervals for 10-30 seconds, though without the characteristic Cheyne-Stokes type. He died at 10.40 A. M. on the 24th of January. An undulation of the flexor longus hallucis of the left side was noted throughout his unconsciousness, and persisted for half an hour after death.

The *autopsy* showed some general thickening of the pia-arachnoid of the brain. This was more marked in some places at the base, especially the anterior perforated space and at the fissure of Sylvius, but no gummatous exudate was present. The

vessels at the base appeared somewhat thickened in places. The dura showed no abnormalities. The convolutions were broad and appeared rather flattened. Weight of the brain with cerebellum and pons 1450 grams. The upper part of the pons showed on its ventral side a slight bulging on the right, near the median line. The pia-arachnoid of the pons medulla and spinal cord was somewhat thickened. The dura of the cord appeared diffusely thickened.

On a posterior root of the third thoracic segment there was a small growth.

Nothing of note was found in the internal organs, except in the spleen, where a yellowish focus was seen, about 1 by 1 cm. This proved, on microscopic examination, to be made up of masses of cells enclosing necrotic areas. In the immediate vicinity of this latter epithelioid cells are found in large numbers. Giant cells are both numerous and large. A fair number of lymphoid cells are grouped irregularly outside of the layer of epithelioid cells; in some foci these cells are few. The tissue is not very vascular.

Before the extent of the lesion at the base was known (owing to the absence of a marked exudate) the brain was cut for other purposes in a manner which later made the reconstruction somewhat difficult. A horizontal section was made through the hemispheres at the level indicated by Fig. 1. The base was then treated in the following manner: Two parallel horizontal sections, each about 3 mm. thick, were removed (then with the idea of studying possible Marchi degeneration), while the rest of the base was divided by a vertical cut through the peduncles; here also two pieces were taken, each 3 mm. thick. The upper part was cut into three portions by sagittal sections. All these pieces were then cut into serial sections, and a fair number stained and examined. They were stained with hæmatoxylin, and counter-stained with acid-fuchsin, eosin, or by Van Gieson's method, also with Pal's modification of Weigert's myeline-sheath stain. In the thick pieces, however, the results with the last method were unreliable, because the brain had not been prepared with a view to making large sections.

Upon microscopic examination of a large number of sections, the following conditions were found: The meninges at the base,

especially in the deep fissures and sulci, show marked infiltration with various forms of lymphoid cells. The infiltrated membrane often fuses with the brain substance, so that in many places no dividing line can be seen. Frequently, as will be further described, certain focal lesions of various sizes are noted. The blood-vessels, except those at the convexity, show in many places marked alteration. The intima, media and adventitia are deeply infiltrated, in most arteries, with lymphoid, endothelial and plasma cells. Small focal lesions, similar to those before mentioned, are not infrequently seen in the adventitia. The media is less affected, as a rule, than the other coats, but it frequently shows a thickening and moderate infiltration. The intima shows many stages of proliferation, from a moderate increase in the endothelial cells to a typical endarteritis obliterans. In a number of places two or even three layers of elastic membrane are seen, as has been repeatedly described (see, for example, the illustration in Nonne's book). The veins also show similar changes, but this is noticeable to a greater extent in the spinal cord than in the brain.

Thin sections from the various focal lesions referred to above were examined, and all show essentially the same histological structure, viz.: masses of very cellular tissue enclosing foci of necrotic material. The cells making up the main masses consist of the various cells which may be found in granulation tissue and in lymphadenoid tissue. Interspersed among the cells are a large number of capillary blood vessels.

The necrotic areas are generally seen to be bordered by elongated cells with vesicular nuclei and indefinite protoplasm (epithelioid cells). Giant cells are occasionally found. In brief, the focal lesions have the general appearance of masses of granulation tissue undergoing necrosis, and have a structure which might be that of a gumma or a neoplasm due to tuberculosis, as we know of no purely histological criteria for distinguishing with certainty between the two diseases.

The following points in harmony with the present teachings seem to indicate that the lesions in this case are due to syphilis rather than to tuberculosis:

1. The presence of granulomatous new growths in the spinal meninges and especially about the roots of certain spinal nerves. Tuberculosis of the spinal meninges does not usually produce

such neoplasms. 2. The age of the individual, tuberculosis of the nervous system being much more common in childhood and youth. 3. The existence of extensive sclerotic lesions in the vessels of the brain and cord. 4. The failure to find tubercle bacilli in any of the lesions, although they were carefully sought for. This negative result is qualified by the fact that the tissue had been hardened in Müller's fluid, which is unfavorable to the demonstration of tubercle bacilli. 5. The history of syphilis. 6. The extent and intensity of the lesion.

In the brain tissue adjacent to these focal lesions, there is a well-marked increase in the neuroglia cells, some of which attain huge size. There is a replacement of brain substance in some regions by a spongy-looking tissue consisting of heavy bands of fibres, and, not numerous, but only loosely distributed among them, huge glia cells.

The location of the main lesions in the nervous system is, briefly, as follows (the illustrations will supplement the description): Beginning at the base in the *right* hemisphere, we find the vessels and pia in the anterior perforated space markedly affected, and from there the infiltration extends upward, evidently, with the blood vessels into the caudate and lenticular nuclei. From the fissure of Sylvius the temporal lobe is involved. From the pia between the temporal lobe and the peduncle there is an extension into the cornu Ammonis and the peduncle. The thalamus is the seat of several foci. One barely invades the external geniculate, another to a slight extent the internal geniculate body. The pulvinar shows marked involvement; the region of the red nucleus is somewhat infiltrated. A large focus is found in the splenium of the corpus callosum. Some of the convolutions on the inner surface of the brain are much invaded, notably the hippocampal gyrus.

In the *left* hemisphere there is less of an involvement. The most important gumma is that in the peduncle. Small foci are found in the frontal and temporal lobes, again in the hippocampal gyrus, and to a very slight extent in the tissue in the neighborhood of the fissures of the occipital lobe.

The optic chiasm is somewhat involved, and in the vertical sections through the peduncle some degeneration is found in the optic nerves with Marchi's method.

The convexity is remarkably free from alteration except for

diffuse changes in the myelin fibers and the glia. The myelin fibers, especially the tangential, seem somewhat diminished throughout; in the sections from the first frontal convolutions this diminution is very decided.

The glia layer at the surface of the cortex is distinctly thickened in places. In the first frontal convolution and the paracentral lobule this is very marked. Moreover, the fibers which constitute this layer and those which pass down into the cortex are uncommonly coarse; the glia cell-bodies enlarged (see microphotograph). Enlarged glia cell-bodies are seen in the region representing the transition between cortex and white matter. There are, therefore, very decided diffuse alterations in the cortex of the convexity of the anterior portions of the brain. But in spite of these changes, which might perhaps suggest a beginning of general paralysis, there is nowhere to be seen any alteration of the blood vessels, notably no accumulation of cells in the adventitial spaces, and the general normal arrangement of the nerve-cells, as seen in many Nissl preparations, appears not at all disturbed.

The internal structure of the nerve cells presents throughout the cortex decided changes. The greater number of the cells have undergone the typical fever alteration, which is now so well known that it need not be described. In the second layer, especially, are seen many typical illustrations of the alteration described by Hoch as "shrinkage." Cells which answer to this description are often found in deeper layers, though they are paler, and the meshes of the honeycomb are not as clear and sharp as is commonly seen. While these two alterations are well known, other cells are seen which are more difficult to interpret; cells among the medium-sized and larger pyramids, which have a homogeneous nucleus with more or less uneven outline. There are transitions from these nuclei to those of the cells described as "shrinkage." But the cell body presents the characters of the fever alteration, though it is apt to be more ragged. The nucleoli are not altered, except in very isolated cells. The question, of course, arises whether the cell changes described last have to be regarded as an integral part of the diseased process, perhaps as an expression of the last flaring up, which clinically manifested itself in convulsions, unconsciousness and death. The experience in this laboratory with a large number of cortex specimens from the

autopsies of the most heterogeneous general hospital cases seems to show that similar changes are not very uncommon, and that they are found, as in the case here, where the "shrinkage" and fever alterations occur together. It is not unlikely that they are due to the combined effect of the two influences, the fever and the influence which produces the shrinkage. What this latter influence is we do not know definitely. But our experience has taught us that the alteration is most marked in cases with chronic passive congestion; and for this reason it has been suggested that it may be due to an abnormal fluid content of the tissue on the one hand, and to the physical action of the alcohol used in hardening on the other.

In the *pons* the bulging which was noted at the autopsy proved to be a focal lesion 6-10 mm. in diameter. It was situated in the ventral part of the *pons*; extending from about the region of the exit of the fourth nerve upward to the *crura*, it involved to a certain extent the region of the right pyramid and of the fronto-pontine tracts; but it also passed somewhat over the median line into the region of the left pyramid. Another focal lesion, 6 mm. in its greatest diameter, was found in the lateral part of the fourth ventricle, on the right side. It was largest at the level of the seventh. It interferes somewhat with the ascending eighth, Deiter's nucleus and the restiform body, especially the inner portion of the latter. It does not interfere with the superior cerebellar peduncle. This focus is almost entirely made up of necrotic tissue. In the medulla there are no foci, nor have there been any lesions noted on thin microscopic sections of the cerebellum.

The membranes over the *pons medulla* show in places marked thickening and infiltration of the nature above described. Some of the cranial nerves are slightly infiltrated. Besides the optic, above mentioned, it is especially the eighth that presents some degeneration.

In the upper *pons* the left superior cerebellar peduncle shows some diffuse degeneration both with the Pal and Marchi stain. The right pyramid below the lesion above mentioned shows marked degeneration, especially in its ventral and mesial portions; a similar, slighter and smaller degeneration is seen in the pyramid of the opposite side. This also shows diffuse degeneration (Pal and Marchi). In the medulla it is clear that both pyra-

mids are diffusely degenerated, but the degeneration of the right side is more marked. It will be seen later that in the cord there is no difference noticed between the two sides.

In the cord, the dura is evenly thickened, the pia-arachnoid irregularly infiltrated with cells, and thickened; small focal lesions are at times seen near the margin of the cord of the cervical and thoracic region. Some of the arteries are affected similarly to those in the brain, but the process is less intense. The veins, however, show greater alterations; they are deeply infiltrated, and present in many places small focal lesions in the adventitia. Sometimes this infiltration seems to extend into the periphery of the cord, but there is nowhere any infiltrative lesion in the cord. The nerve roots frequently show slight infiltration, but the fifth ventral cervical root presents a neoplasm, so that a large part of the root is totally destroyed. Lower down in the cord, beginning at the fifth lumbar, and especially at the first sacral, and extending with diminishing intensity down to the fourth sacral, is seen a very marked degeneration of the ventral nerve-roots. There is here a peculiar hyaline, glassy-looking tissue which without interruption extends into the nerve-roots, pia-arachnoid and ventral portion of the spinal cord (on one side nearly up to the ventral horn), so that the dividing lines are absolutely obliterated. It is a tissue with few nuclei. This same glassy-looking substance is also seen in other parts of the cord, partly around blood vessels or in the vicinity of septa, and extending more or less extensively and irregularly into the white matter; in the latter the substance, which is illustrated in the micro-photograph (Fig. XIII), looks like a hyaline mass in which holes have been irregularly punched for a few myelin fibers. This is the case in some places in the cervical cord. In the portion of the sacral cord referred to, there is a total disappearance of myelin fibers, and the normal tissue seems totally replaced by this substance. The same punched-out appearance is seen, however, in some of the nerve-roots adjoining the sacral cord. At the levels where the ventral roots are interfered with there is a decided loss or shrinking of the ventral horn-cells.

At all levels of the spinal cord there is a marked marginal sclerosis, which usually has a fibrillary appearance, but in places approaches the hyaline look, as described.

On the right dorsal root of the third thoracic segment between the dura and the cord was found a distinct mass, 6×3 mm., enveloping most of the fibers. Upon serial sections the nerve roots were found to be markedly degenerated within this growth, the myelin having quite disappeared from many fibers. The roots next the cord showed much degeneration, but those next the dura were also slightly degenerated. The growth proved to be a very vascular neoplasm, containing necrotic areas similar to those described in the brain, but showing more young connective tissue with cells having faintly stained oval nuclei and branching bodies. The reticulum was very dense in places; phagocytes, containing myelin particles, were numerous; only an occasional leucocyte was seen.

In a few places there are small, irregular areas of degeneration without infiltration (*fleckförmige Degeneration*.) The largest focus of this kind is in the third dorsal segment; a more diffuse, slighter degeneration is seen in the region of the tenth dorsal segment. They are both in the posterior columns.

Secondary degenerations are found in the cord throughout the pyramidal tracts, which are markedly altered, but, as has been said, there is no decided difference between the two sides. There are also secondary degenerations due to the thoracic-root lesion and the focus in the third dorsal segment, but a description of these is reserved for further study.

In a case in which the lesions are so extensive and of such long duration, the correlation of individual symptoms and anatomical findings would seem somewhat problematical. Nevertheless, this is clearly only the case in regard to some of the clinical manifestations.

The disorder of the gait as it appeared in the latter part of the course and its association with increase of the patellar reflexes was evidently due to the existence of the focus in the peduncle of the left and the focus in the pons of the right side, which latter also involved somewhat the left pyramid.

The staggering (cerebellar) gait, which was one of the first symptoms, is more difficult to refer to a definite anatomical cause, but we have seen that the cerebellar connections have been variously disturbed.

The interference with the bladder may fairly be referred to the lesion noted in the sacral cord.

The transient left-sided hemianopsia was probably due to the involvement of the right pulvinar. It will be remembered that the external geniculate body is barely affected. The final narrowing of the visual field, on the other hand, may find its explanation in the affection of the optic nerves. As a cause of the defect in hearing we have noted an infiltration of the eighth nerve (and on one side at least the internal geniculate body is somewhat implicated).

It seems scarcely justifiable to speculate on the anatomical correlate of the mental symptoms. In this respect we may, however, state that the acute onset of the defect and the unaltered persistence certainly argue against a dependence of the mental symptoms on the diffuse alterations in the brain cortex, and point more to the characteristic syphilitic lesions.

In looking back over the case, we find that the general anatomical features in themselves present no special variations from the cases described, but it seemed of interest to follow up the lesions in serial brain sections in order to show their extent and distribution, notably their relation to the blood vessels and meninges in places, also the extent of interference with the various regions above mentioned, by which an explanation of some at least of the symptoms was possible.

Moreover, it seemed important to put on record the extent of the lesions in the brain, owing to the interesting mental picture, in spite of the fact that we cannot correlate the two. This mental picture resembled the symptom-complex found in Korsakow's disease.

As differing from the anatomical findings we would, however, call attention especially to the peculiar hyaline, glassy-looking substance, which resembles very closely the appearance which Dercum and Spiller have described lately, and to which they refer as the colloid infiltration of Obersteiner.

Finally, a feature of importance in this case is the diffuse degeneration and glia increase in the brain cortex, not dependent on any of the focal lesions or on any meningeal or vascular involvement. More and more has it been found that syphilis, besides giving rise to vascular and meningeal changes and to the devel-

opment of granulomata in the nervous system, may also be associated with diffuse degenerations. This is especially true in reference to the cord, for in the brain it has rarely been described (see Haenel's case).

I am greatly indebted to Dr. August Hoch for his direction of this work; also for the drawings of the brain sections.

Dr. Jas. Homer Wright, director of the laboratory of the Massachusetts General Hospital, has most kindly aided me by his valuable advice in interpreting the histology of the lesions.

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DESCRIPTION OF ILLUSTRATIONS.

FIGS. I-V.—Drawings of sections through left hemisphere.

FIGS. VI-XI.—Drawings of sections through right hemisphere. *C. N.*, Caudate Nucleus; *F. S.*, Fissure of Sylvius; *I. C.*, Internal Capsule (posterior limb); *P.*, Pulvinar; *C. G. E.*, External Geniculate Body; *Th.*, Thalamus; *C. G. I.*, Internal Geniculate Body; *P. P.*, Pes Pedunculi; *O. N.*, Optic Nerve; *T. L.*, Temporal Lobe; *Ped.*, Peduncle; *L. N.*, Lenticular Nucleus; *G. H.*, Gyrus Hippocampi; *C. C.*, Corpus Callosum; *A. P. S.*, Anterior Perforated Space; *R. N.*, Red Nucleus. The different areas are indicated by groups of dots.

FIG. XII.—Microphotograph of section of cord at the level of 5th lumbar root, showing the hyaline appearance in ventral portion of cord, pia-arachnoid and ventral roots.

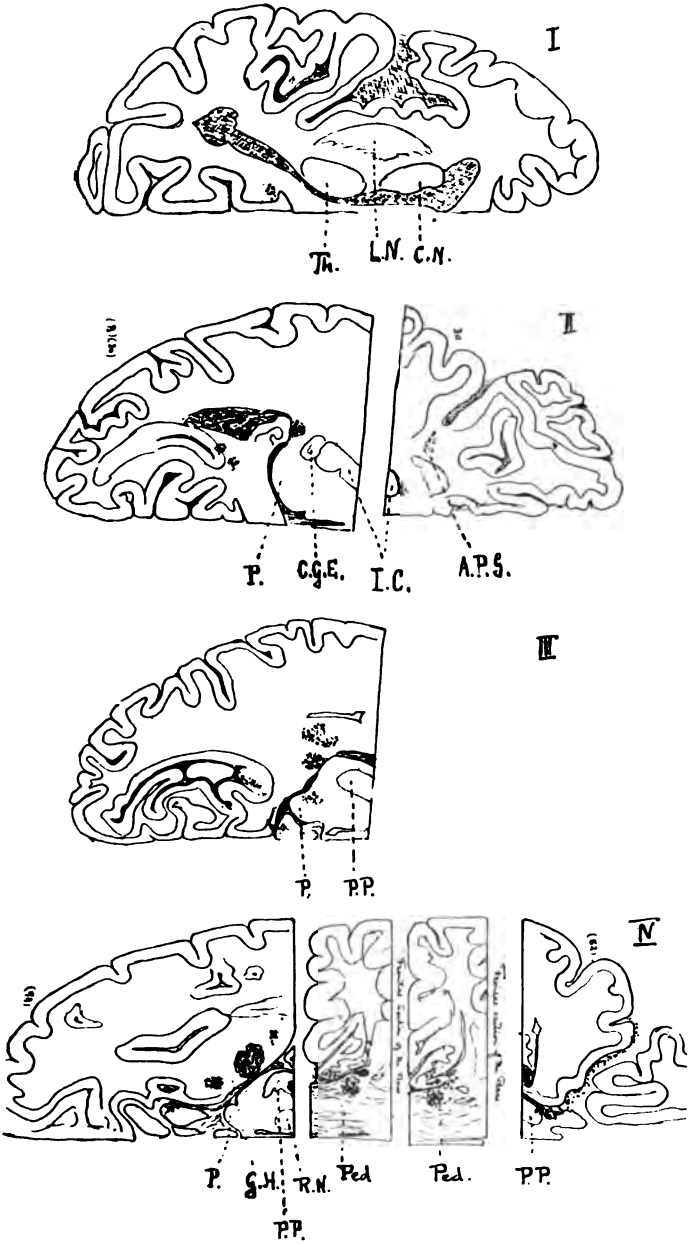
FIG. XIII.—Microphotograph showing the hyaline-looking substance in the white matter of the cord (cervical region).

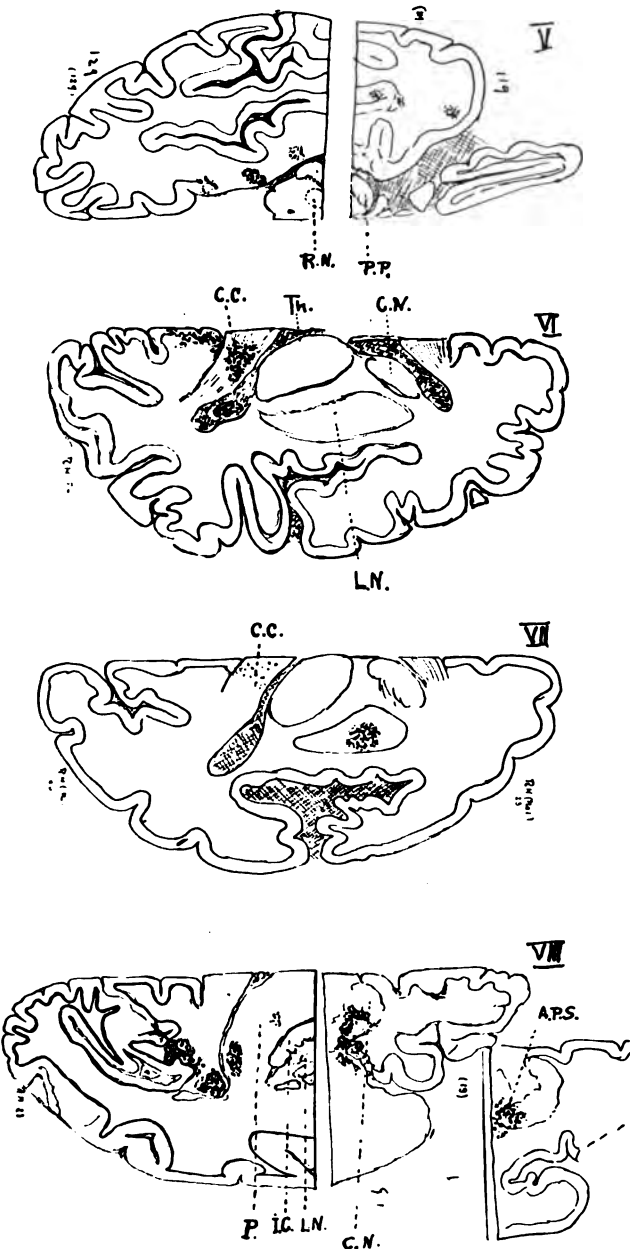
FIG. XIV.—Microphotograph of artery (medulla), showing infiltration of the adventitia, thickening of the media, several layers of the elastica, and proliferation of the intima.

FIG. XV.—Microphotograph of the wall of a vein, showing separation of the laminae by infiltration with cells.

FIG. XVI.—Microphotograph showing obliterated vessel.

FIG. XVII.—Microphotograph showing increase of glia in the superficial layer of the cortex. (Benda stain; paracentral lobule.)





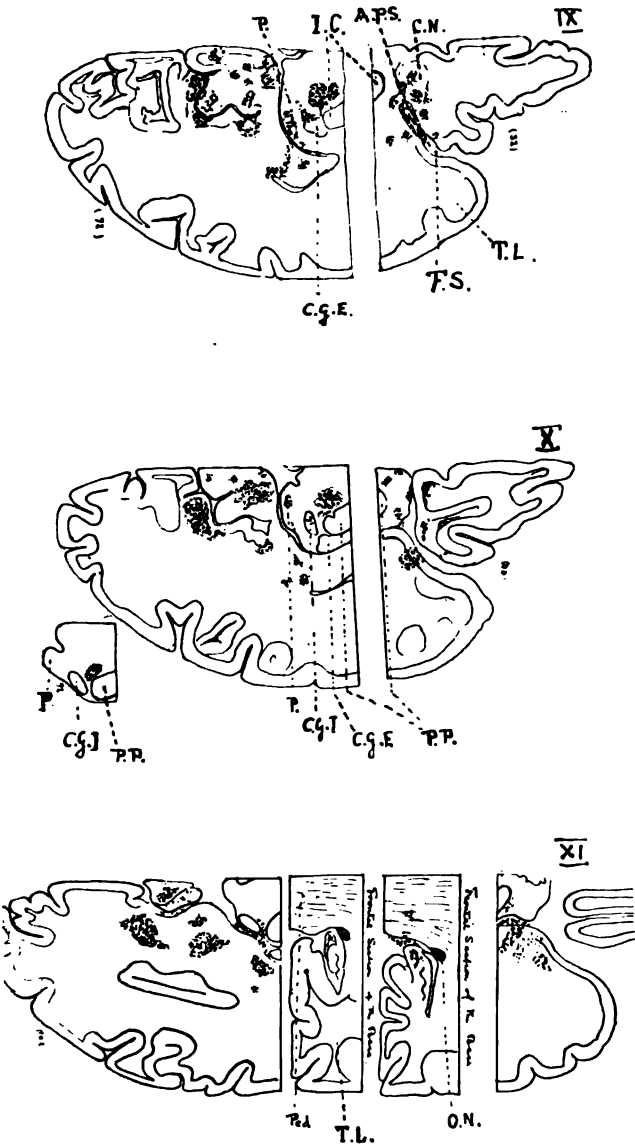




FIG. 12.

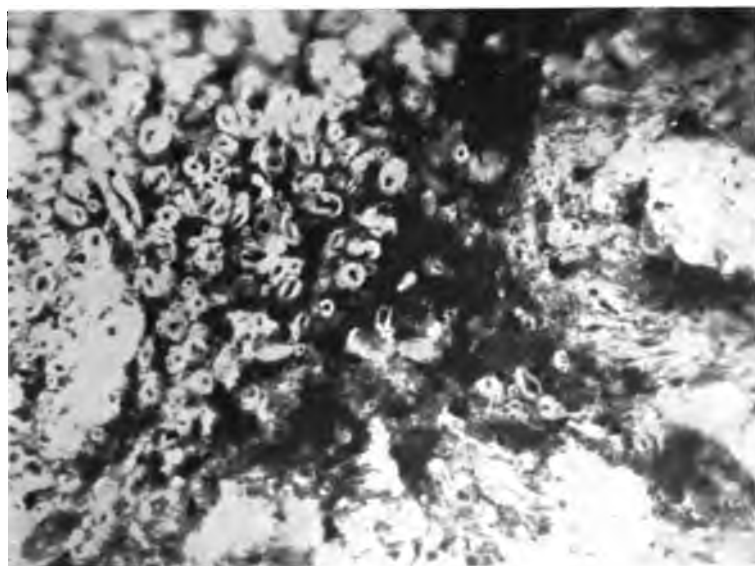


FIG 13

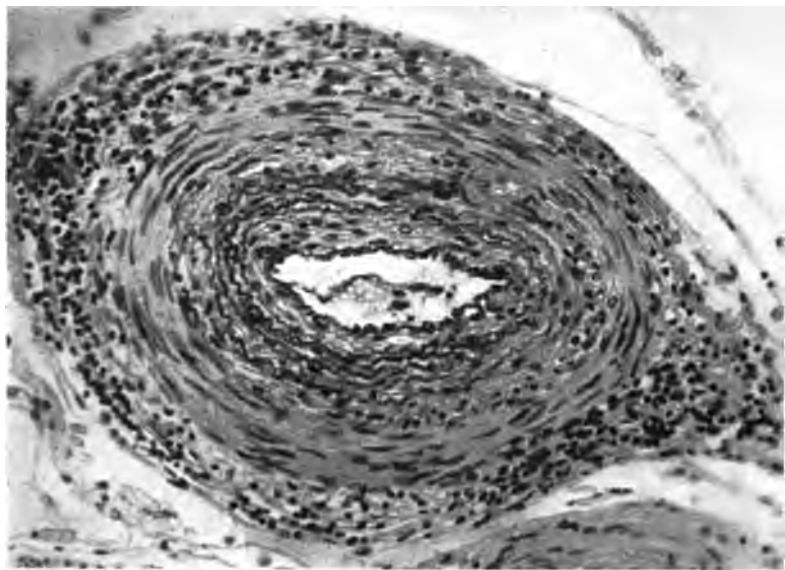


FIG. 14.

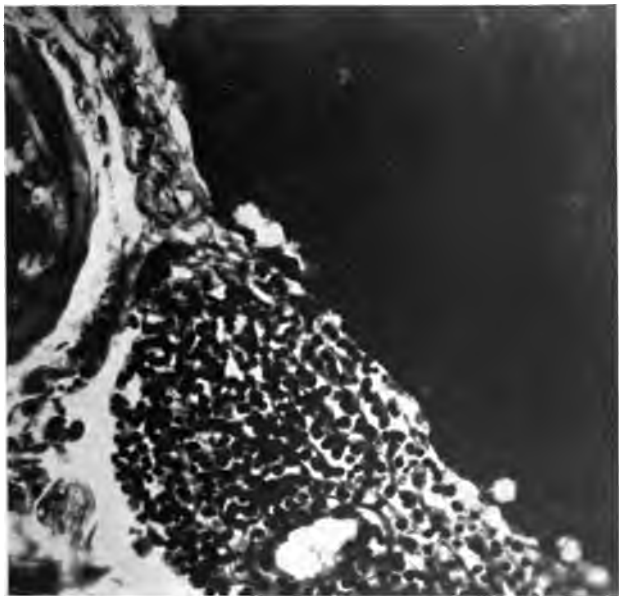


FIG. 15.

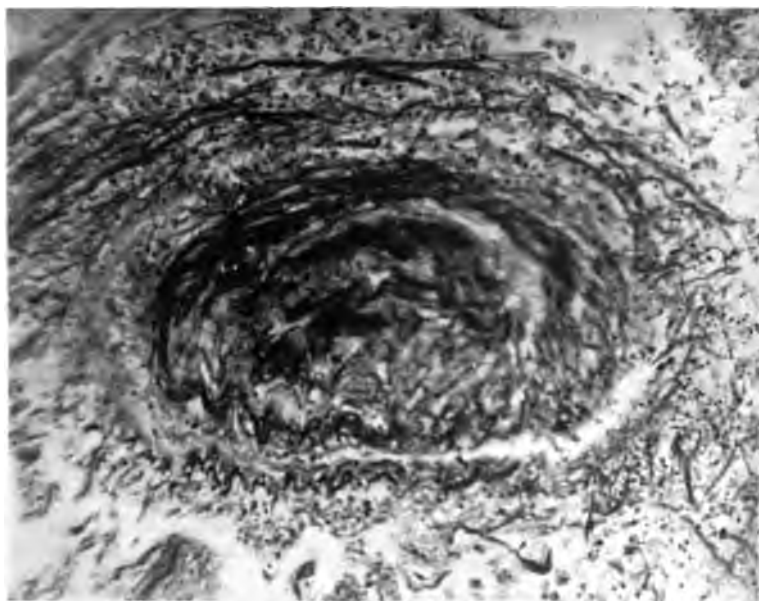


FIG. 16.

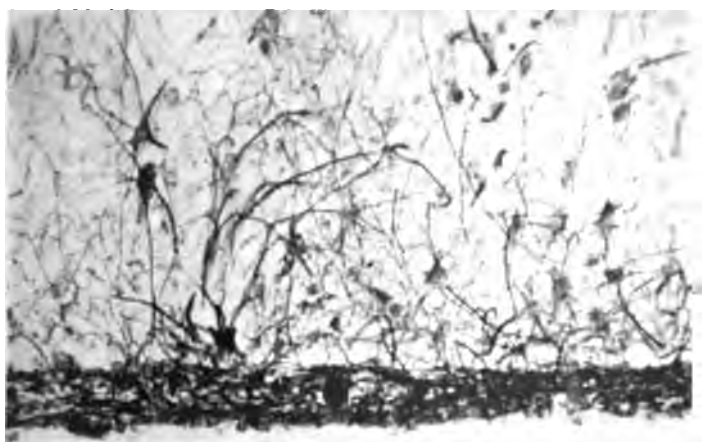


FIG. 17.

A MEDICO-LEGAL CASE OF WELL-POISONING, WITH A PLEA FOR A HOSPITAL-OBSERVATION LAW.

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Although this case has a certain interest of its own, it is chiefly important as exemplifying the difficulties that are sometimes encountered in examining a person's mental condition and the need there is of further legal safeguards to insure accurate medical decisions in obscure cases.

The writer was called upon by the District Attorney, to examine and make report, in conjunction with Dr. G. F. Jelly, with reference to the sanity or insanity of P. H. C., charged with poisoning a well with intent to cause the death of Mrs. S. T. Both the prosecution and defence agreed to abide by our decision.

The following evidence was furnished by the prosecution:

"On Monday, Sept. 29th, 1902, complaint was made to the police that the well of F. B., in the town of A., had been discovered to have a substance in it which resembled poison. As much as could be collected was analyzed and found to contain sugar of lead. C., who was at that time working in Worcester, was found to have left there Saturday afternoon, passing through South Framingham, where he purchased a large quantity of sugar of lead, saying that he wanted it for use on horses. He arrived at A. Saturday night, appeared at the house of his brother early Sunday morning and left some time Sunday. Living at the house of Mr. B. is his sister, Mrs. T. to whom C.'s mother had left \$2400 several years ago in trust for C.'s children. C. has a number of times demanded that he should have charge of the money. There have been many disputes between C. and Mrs. T. over it, and he once said to her, "This matter may end in a tragedy." Sufficient reason being found, the police arrested P. C. on Oct. 7th. He said that he went to A. Sept. 27th to get his trunk. The well in which the poison was found was an old one, from which the water was pumped into the house, and it was the peculiar milky appearance of the water that came into the house that caused the investigation of the well and its surroundings. Considerable white

powder was scattered on the stones inside the well and on the curb, and the water appeared of a whitish color.

"C. is a machinist by trade, a widower, 57 years old, six feet tall, and a powerful man. He was at one time principal of a high school.

"He was enlisted during the Civil War, but deserted and went by the name of Claude Beverly for some time. His family are very much afraid of him, and his brother says he would not dare to go into the house alone with him. If not insane he is apparently a dangerous man. The Commonwealth does not admit the person's insanity and is inclined to think it merely a case of deep hatred and determination to have his own way in regard to the money."

The evidence for the defence was gathered by ourselves and appears in our report which is here given as submitted, except for a few unimportant changes:

"The prisoner is a well-educated, intelligent man, who tells his story in an apparently straightforward, consistent manner, with no attempt at concealment of anything that will not actually incriminate him. He acknowledges freely that he had often tried to alarm Mrs. T., into relinquishing the trusteeship of a sum of money left for his children. At one time he carried a revolver, which he intended to use upon himself, in the belief that when Mrs. T. found that her refusal had driven him to take his life her remorse would lead her to give up the trust. It was suicide that he had in mind also, when he warned her that her conduct "might lead to a tragedy."

His grievance against her is of long standing. According to the statement of his council, C. consulted him more than two years ago representing that Mrs. T., a second cousin, had had \$2400 placed in her hands by his mother to be used for the benefit of his children, and he thought that he, their appointed guardian, should have custody of this money.

He showed intense feeling when discussing that phase of the case, and more excitement at each succeeding interview. He admitted that the trustee was honest and had not misapplied the money, although none of the funds had been used. He had never told her the children's needs or demanded money for them "because he had too much pride." He was told that it was too small an affair for him to be so disturbed about and that the judge of probate would never consent to appoint him his children's trustee while he was their guardian, a fact of which it was most

difficult to convince him. Although urged to approach her as a father should for the sake of his children, he repeatedly insisted that he would never ask her for a cent. His manner of talking and acting at that time seemed to Mr. R. unusual and not exactly normal. When a third person was suggested for trustee in her place he would reiterate, "I want no one but myself to be the trustee." He was very angry over remarks made by Mrs. T., that he could not take proper care of his children, and had many disputes with her. Mr. R. could see no adequate cause for his intense feeling in the matter. C. finally became dissatisfied and took the case out of his hands.

Mrs. T. states that she offered him \$50 of the money at one time, for the children, and later \$200. He refused it and demanded the entire amount that was in her keeping. She told him plainly that she would give him money from time to time, without question, whenever he said that the children needed it. She was afraid that in his avarice he might deprive them of it unless the children's wants were specified. He did not directly threaten her but told a neighbor that if she knew what was in store for her "she would drop the trust like a red-hot poker." Her brother had often talked over the possibility of having him sent to an asylum, as they had all become afraid that he would kill someone or burn the house, but their dread of him prevented this. They all thought him insane.

A medical practitioner in good standing who is a relative and friend of the prisoner, never saw any tendency in him to mental disease until after the T. affair had come up. He brooded and fretted over it, talking continually of his grievance. He lost his appetite and sleep, and the expression of his eyes changed. This physician became so concerned about him that he twice wrote warning letters to Mrs. T., and consulted with C.'s brother and others on the advisability of having him committed to a hospital for the insane.

A connection by marriage reports that he was always grasping and avaricious, allowing his desire to get and to keep to carry him to great lengths. Money questions always aroused an element in him that she had never seen in anyone else. He once consented to having her ask Mrs. T. for money for the children but withdrew his permission immediately afterwards. He was always very emo-

tional and high-tempered. He once threatened to strike with a chair a woman with whom he had some difference about money. He is very impatient and cruel with animals, so much so that his wife had said that she could not live on the ranch with him. He had a high opinion of his own worth and felt that he was not properly appreciated. He was most fond of his children and they of him, but had been inclined to neglect them at times. When himself, he was agreeable and fairly easy to get along with much of the time. Shortly before his arrest his son, a lad of 17 now living with her, was greatly disturbed over his father's condition and thought that something was wrong with his mind. C.'s brother testified at the inquest that he talked about his wrongs at Mrs. T.'s hands day and night.

Measurements of the prisoner's cranium, by Dr. H. W. Miller, pathologist of Taunton Insane Hospital, show in one direction marked divergence from the normal skull. (See table.)

The statements of the prisoner which bear upon his mental organization and condition are as follows:

His mother married a first cousin. They quarrelled constantly and she finally left him forever. Later, she placed money that she had saved into the hands of a man who misappropriated it, and in the quarrel which arose in consequence she shot and killed him. For this crime she served a sentence of seven years in the State Prison for manslaughter. At the time of the famous Lizzie Borden trial and in consequence of brooding over it, she became mentally upset for a time. She was afraid that P. C. would kill her as (she believed) the girl had killed her parents, and had her door barricaded. In reality she had confidence in and affection for him, and he shows letters of hers which put this beyond question. She would also sit in the barn all night with a gun in her hands, on the watch lest someone should burn down her house. Many years before, one of his brothers, whom he stigmatizes as a "degenerate," a dissolute, worthless fellow, had burned down the house in which he had an interest, for the insurance money. Another brother disappeared and has never been heard from since. Still another, he considers as "miserly to the last degree, leading a wretched, miserable life, although worth \$50,000, and peculiar in conduct."

When a lad of 17 and while his mother was in prison he enlisted in the Union Army, after changing his name, got his bounty and immediately deserted. Later, he returned \$75 of the \$100 to the State treasury and endeavored to repay the government for the rest. Of this he asserts there is documentary proof. He was afterwards graduated at Cornell University where he had taken a high rank. Since then he has always

worked steadily, although at various callings: schoolmaster, engineer, surveyor, farmer, and machinist, preferring the latter because "there was more money in it." He has earned a fair living, chiefly in Kansas. He was once arrested and fined for extreme cruelty to a cow and was once complained of to the police for punishing his children too severely. He has recently been having altercations with his brother over selling the house which they own in common. He admits that he is very suspicious by nature, that he has a quick temper, that "he loses his control easily and does things which he would not otherwise do," and that he has been considered "cranky" by people in general and perhaps rightly so, but scouts the idea that he has been insane at any time. He "would like to say that he thought he was not responsible at times for what he did, as it would help his case, but cannot conscientiously do so."

On Saturday, September 27th, he went from Worcester to A. "to get his trunk," passing through Framingham. He reached his brother's house late in the evening but did not go in, as it was locked. He knew also that his brother was afraid of him and kept a loaded gun at hand. He got what sleep he could on the doorstep and at the railroad station. In the morning he asked his brother for his wheelbarrow with which to carry his trunk to the station. His brother immediately brought it from the B.s' where Mrs. T. lived and where the well-poisoning took place. C. left for Worcester the next morning.

As to his guilt, while he denies most vehemently that he intended, much less attempted to cause the death of Mrs. T. or anyone else, he says, "I will neither affirm nor deny that I put the sugar of lead into the well." He told no one of his intention to come to A. and his brother was much surprised to see him. Although he (C.) makes many other charges against his brother he does not accuse him nor any one else of committing the crime nor does he express any suspicions regarding it. He admits that he is the only enemy that Mrs. T. has. He thinks it "not best to say why he made the hasty and unexpected trip" to the scene of the crime, and in the course of his denunciation of Mrs. T. makes the somewhat significant admission: "Under the same circumstances I would again act as I did then," also that "when he is accused of buying sugar of lead elsewhere than at South Framingham he will answer that question" but that he who swore that he bought it there was guilty of perjury.

In this connection it is proper to state as indicating the intent of the perpetrator of the crime that as appeared at the inquest much of the poison was found scattered in plain sight outside the well, and that the analysis of the water by Prof. Hills of the Harvard Medical School showed but $1\frac{3}{4}$ grains of the sugar of lead to a gallon of water. The smallest poisonous dose of this substance is five grains. C. had sufficient knowledge of chemistry to know its poisonous properties. He had no feelings of enmity whatever toward any of the B. household, with the exception of Mrs. T. whom he had long wished "to pay off in her own coin" by intimidating her and thus causing her such anxiety and distress of mind

that she would be glad to abandon the trust. He acknowledges that if he had gone to her and specified the needs of his children she would have supplied what money was needed. Against his brother he is very bitter, believing that he would be glad to see him punished whether guilty or not and would willingly testify falsely against him.

The injustice of Mrs. T.'s course rankled in his mind continually and he became so absorbed in thinking about it and how he could throw off her "domination" that he did not sleep, and, although a skillful mechanic, so spoiled his work that his wages were kept back by his employer. He felt that she and his brother "spoiled his life." The thought of suicide was constantly before him. He would walk about all night. He sought different kinds of work in the hope of shaking off the thoughts which possessed him. He felt that if it would only end in her giving up the trust he would willingly go to prison for life. It was his constant thought. "It went to bed with me and got up with me." "I cannot express how intently I felt on that subject." He does not, however, consider his feeling at all morbid. He fully believes there was and is a conspiracy between Mrs. T. and his brother to "torment him and break him down and ruin him in any way they can when they could have settled the whole thing by putting it into someone else's hands." He thinks that if there is not a conspiracy there is at least a community of interest between them. His dominant trait, avarice, is lost in his intensity of feeling on the subject. He reiterates that "he does not want the money." That "he or his children would scorn to take it." "It makes no difference whether the amount is \$3000 or \$3,000,000 it is the principle of the thing." He says, "I want that woman's foot off my neck and it will come off." "She shall not retain her suzerainty over me." "She does not care if she ruins me and transmits the wrong to my children." "It is a matter of indifference to her whether I go to hell or not." "I would rather see the devil trustee than Mrs. T." "I know that she wanted to carry her malevolence as far as it could be carried." "If free I would never cease to make her give up the trust." "That desire would be more to me than the life of my children. I would rather see them dead than have them accept a cent from her or remain under her control in any way." "She is my destiny, my evil genius." "It would not be wrong for me to kill her but I will not say that I would do it." "I feel as strongly about it as I would if my daughter were in a house of ill-fame." "The thought absorbs all my being." "It is my fixed purpose, my duty to throw that woman out of the saddle at any cost." "The idea is my religion. It is even greater than any affection for my family. For my own boy's sake I would not give it up."

He became greatly excited in the recital of his wrongs and tears came to his eyes. When the latter and more extreme statements were repeated to him verbatim long after his excitement had sub-

sided, and he was asked if in the heat of the moment he had not said more than he meant, he replied that he had nothing to retract or modify and persuasion and argument were of no avail. At the last interview his excitement and the strength of his delusions were far more pronounced than at others. This was because he had just learned that Mrs. T. still kept the trust and had not, as he had hoped, given it up in consequence of the recent developments.

The salient features of the case, with our conclusions, are as follows:

1. The family history with its record of murder, arson and other crimes, insanity, and strange and peculiar conduct, makes it very evident that the prisoner entered life and began his career handicapped with a strong, hereditary, predisposition to mental instability. In this connection it is perhaps of some significance that the deformity shown in his skull is of a kind that is regarded by the expert as a stamp of congenital degeneration.

2. His temperament—also an important feature—shows that many of these tendencies in his family have been reproduced in him. He is over-sensitive, emotional, quick-tempered, violent, cruel, more or less vindictive and very suspicious by nature. Moreover, although very intelligent and something of a "character" he is wanting in common sense and adaptability. He is inaccessible to argument and inclined to egotism. He has followed many callings but failed in all except in that of machinist, an employment that is not worthy of his abilities. His good traits, affection in general for his family, industry and temporary amiability do not prevent him from being very uncertain in his care of his children, and in his relations with people in general. Such a mental organization is recognized as the "insane temperament"—the paranoic type of mind.

3. These natural qualities appear to have grown more pronounced with years, evidencing progress toward mental deterioration, and when the T. affair arose his mental condition was ripe for the intense disturbance which followed, and in which his naturally morbid emotions and suspicions, as well as his deficient self-control and weak judgment, became morbidly intensified and passed the bounds of reason and sanity. The mental disturbance was even acute for a time as a result of brooding over his supposed wrongs. This is shown in his loss of sleep, appetite, interest and

ability in work and almost entire neglect of his children. He was also extremely restless and talked continually of his grievance. His belief about Mrs. T. who, though uncompromising in her sense of duty as trustee, and most unconciliatory in her attitude toward C., had done no wrong whatever to him or his children, had (combined with his hatred of his brother) finally developed into actual delusions of persecution and conspiracy. That his sense of right and wrong was impaired in regard to dealing with her is plainly evident from his profound conviction that it was "duty," his "religion" to "dethrone" her, and to see that his children devoted themselves to righting this "great wrong."

Whether or not he committed the crime with which he is charged, or whether or not he only attempted to frighten Mrs. T. and the others—a fact that he does not deny—there is no question in our minds that his insane delusions had goaded him to such a state of desperation that he was no longer a free agent, and that an overt act in that direction would be the logical culmination of his irresistible and insane desire.

In our opinion therefore the prisoner was insane and irresponsible at the time of the commission of the crime, is clearly insane now, and is a dangerous man to be at large."

The prisoner was found by the court insane and was committed to the Taunton Insane Hospital, without trial.

CRANIAL CONFORMATION OF P. H. C.

	Head Measurements.	Approx. Dimensions of Skull.	Average in Males.	Physiological Variations.	
				Min.	Max.
1 Circumference (Max.)	56.5	53.5	52.	48.5	57.4
2 Volume	1444.		1500.	1201.	1751.
3 Naso-Occipital Arc.....	35.5	32.5	32.	28.	38.
4 Naso-Bregmatic Arc.....	14.5	13.5	12.5	10.9	14.9
5 Binauricular Arc.....	34.	31.	32.	28.4	35.
6 Bregmato-Lambdoid Arc.....	13.6	12.6	12.5	9.1	14.4
7 Antero-Posterior Diameter....	20.	19.	17.7	16.5	19.
8 Greatest Transverse "	15.	14.	14.6	13.	16.5
9 Length-Breadth Index	73.6		82.2	76.1	87.
10 Facial Length	12.	12.	12.37	19.5	14.4

Distance between pupils, 6 cm.

Ears well formed and regular. Right, length 7.5 cm.

Left, " 7.4 "

Right, breadth 3.6 "

Left, " 3.6 "

No pathological deformity of palate.

All measurements are given in centimetres. The approximate measurements of the skull are obtained by deducting the estimated thickness of the hair and scalp.

The one striking peculiarity is the length-breadth index which is rather below the usual physiological limit. The usual limits given are from 76.1 to 87. His cephalic index is 73.6. A skull with an index below 78 is regarded as dolichocephalic. The maximum circumference of this skull therefore shows a considerable degree of dolichocephalus. There are no asymmetries of the cranial bones nor of the face.

HENRY W. MILLER, M. D.,
Pathologist Taunton Insane Hospital.

There is but little in this account of the case and our opinion regarding it to indicate its perplexing nature. Nevertheless, after repeated and prolonged examinations the situation resolved itself thus: Here was an intelligent man with an active mind, a family history abounding in crime, an intense, passionate and vindictive nature, a career in which minor criminal offences figured from time to time, and a mental organization unstable it is true, but showing no evidence of actual insanity on repeated and prolonged examination. In fact, we were on the point of pronouncing the prisoner to be not insane and therefore responsible, but of sufficient unsoundness of mind to limit his power of self-control and to entitle him (especially in view of his evident intent) to the leniency of the court, when we decided upon still another interview. Then for the first time his actual mental condition came to the surface in the above denunciatory explosion springing from marked delusions of persecution and conspiracy and establishing his insanity beyond question.

Such an experience is not new to the writer nor, I venture to say, to most alienists who are familiar with medico-legal examinations and there is no question in our mind that an opportunity for hospital examination in obscure cases, where the subject can be under day and night supervision, can be examined by a staff of resident alienists and must live under the eyes of nurses trained to observe and report the talk, conduct, peculiarities, and habits of patients, would be of the greatest help in reaching prompt and accurate decisions and with less expense to the State than obtains under the present system.

Three classes of persons would be affected by such a law :

1. Patients who conceal their delusions. These cases are notoriously suspicious and persistently refrain from unburdening themselves to the examiners, so that many long interviews are often needed to gain their confidence sufficiently to elicit their false beliefs.

2. Persistent feigning can also be far more easily and quickly detected under asylum conditions and surroundings than in jail, owing chiefly to the difficulty a prisoner experiences in keeping up the pretense of insanity uninterruptedly and consistently (as he must to be successful) where he is watched day and night by careful observers. Most malingering is, as we all know, bungling and readily exposed but it is only with the utmost difficulty that really adroit feigning can be detected by the expert in occasional visits to the jail.

3. Notorious capital cases. Here hospital observation as an adjunct to expert examinations must be of advantage in silencing popular clamor and alarm lest the prisoner escape just punishment through what is termed the "insanity dodge." The delay involved also tempers public opinion, as does the evident intent of thorough investigation shown in a term of hospital supervision.

Another and most important point is the fact that the hygienic conditions, mental, moral, and physical, of close confinement and seclusion in jail are apt to impair the mental condition of those who are insane, and to our knowledge in more than one case have undermined the general health of the patient.

The State of Maine has enacted a law to meet this condition which has been in successful operation for many years and has

since been incorporated in the statutes of Vermont¹ and New Hampshire. They are practically the same in each State and provide in effect that persons who are indicted for offences or are committed to jail on a charge thereof, whose plea is insanity, shall be ordered to the State hospital for the insane to be there observed and detained pending the determination of their mental condition. The medical officers of the hospitals as well the judges in the States in which this provision prevails regard it as a useful and just enactment, and we regret that owing to the length of this paper the interesting opinions as to its operation and efficacy, that have been kindly furnished us by Dr. Sanborn and the late Dr. Foster, superintendents of these institutions in Maine, as well as that of Dr. Addison Thayer of Portland, cannot be introduced here.

So much for the merits of the plan. In the writer's opinion, however, the law just mentioned is too sweeping in its provisions and hardly applicable to the conditions prevailing in Massachusetts. In the first place, to send all offenders whose sanity is questioned to the ordinary insane hospital for observation would add a criminal element to the atmosphere of those institutions, which we have long been doing our best to prevent, and would still further arouse the just indignation of the relatives of the present inmates at such association. On the other hand, their removal to our asylum for the criminal insane would be unjust to many patients who have not led vicious lives and in whom the criminal act is only an incidental manifestation of the disease, cases which are explicitly exempted by the law from confinement there. It is important to bear in mind also that with very few exceptions all the experts in insanity in the States of Maine, Vermont and New Hampshire are on the staffs of the State hospitals. In Massachusetts it is quite different and if the same law were in force here it would tend to deprive the State and the insane of the services of a considerable number of experts in private practice who have had extensive experience in a great variety of medico-legal cases. Some of them are also public examiners for com-

¹The reader is referred to a valuable contribution on the subject entitled, "Medico-Legal Phases of the Vermont Observation Law for Criminal Insane," by W. D. Berry, M. D., in the AMERICAN JOURNAL OF INSANITY, Vol. LIX, No. 1.

mitment of insane persons and combine with their knowledge of psychiatry familiarity with practical criminology. It would therefore be far more wise and just in our opinion to make provision for the occasional, important and doubtful case only, by enacting a law to the effect that at the request of the examining physicians the judge of the court before which a person is to be tried for whom the plea of insanity is made, may order said person into the care of the superintendent of one of the State insane hospitals to be there detained and observed until further order of the court. By this means any radical and injudicious overturn of the present procedure in these cases would be avoided and at the same time advantage might be taken of the best means available for securing their thorough investigation.

At the meeting of the Boston Society of Psychiatry and Neurology held in November last at which the foregoing paper was read, a committee was appointed consisting of Drs. Folsom, Cowles, Channing, Jelly, Copp, Ayer, and the writer, to endeavor to secure the legislation therein urged, with the result that the following statute was enacted without opposition or unnecessary delay and has already gone into effect:

Chap. 219, Section 11. "If a person under indictment for any crime is at the time appointed for trial, or at any time prior thereto, found by the court to be insane, or is found by two experts in insanity designated by the court to be in such mental condition that his committal to an insane hospital is necessary for the proper care or for the proper observation of such person, pending the determination of his insanity, the court may cause him to be committed to a State insane hospital for such time and under such limitations as the court may order."

SOME OBSERVATIONS UPON BLOOD PRESSURE IN THE INSANE.

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The literature on the subject of blood pressure is increasing rapidly, and much pleasure and profit might be derived from reviewing the major part of it, but I will resist the temptation and merely call your attention to certain articles which have a direct bearing on the results which follow. For a long time it has been conceded by some that the blood pressure was increased in depressive states and decreased in excited conditions. In 1900, Maurice Craig in an article entitled "Blood Pressure in the Insane,"¹ says: "We may now, I think, take it as accepted that in states of acute mania the blood pressure is low, whereas in the majority of cases of melancholia the blood pressure is raised; in other words, that with the affective disorders of the mind there is an alteration in the tonicity of the vasomotor system." Pilcz² reached the same conclusion, and in one of his cases of circular insanity the blood pressure varied from 60 mm. in the excited state to 160 in the depressed period. It has been found, however, that in agitated melancholia the blood pressure is low, and all the evidence seems to indicate that a low blood pressure in the insane accompanies motor restlessness. The article by Dr. Craig, from which I have quoted, and another by Dr. Henry L. K. Shaw³ are two which I have found most interesting from the standpoint of the alienist. The latter contains a number of references to foreign literature, to several of which I shall direct your attention. Pilcz found the blood pressure normal in the early stages of paresis, but low in the

¹ Brit. Med. Journ., Sept. 22, 1900, No. 2073, p. 184.

² Wien. klin. Wchnschr., No. 12, 1900, quoted by Shaw.

³ The Tonometer and its Value in Determining Arterial Tension. Med. News, Vol. LXXVIII, p. 372.

terminal stage. Heim⁴ found a high blood pressure in neurasthenics and hysterical children, and considered this a diagnostic point. The above references concern the points which will be of most interest to us in the consideration of the observations which form the subject of this paper. The other works to which Shaw refers deal with the effect of therapeutic measures upon the blood pressure, or with the history of the various methods of observing it.

Mention should be made of the investigations made at the Royal Asylum, Aberdeen, by Drs. Bruce and Alexander on cases of melancholia and of mania. Justice cannot be done to their work in a brief abstract, and I therefore append references to their published writings.⁵

Early in 1902 Dr. Harvey Cushing of the Johns Hopkins Hospital introduced to us his modification of the Riva-Rocci apparatus for determining blood pressure, and presented us with an instrument. Dr. Cushing's modifications are merely mechanical, and do not affect the principle of the apparatus. I wish to especially call your attention to the convenience of the Riva-Rocci instrument. Shortly before we began using it we were having constructed the elaborate apparatus of Mosso, which one might say requires a room to itself, and has as another disadvantage to its use that a number of patients are in no condition to be brought to this room. A number of those that might be would endanger the rather expensive apparatus. The form of the Riva-Rocci which we have used we have put together ourselves, and I am sure that three dollars will quite cover the cost of each instrument. It consists first, of a narrow rubber bag with linen covering with hook and loops, by means of which it is secured about the patient's arm. This bag communicates by rubber tubing with one arm of a glass T inserted in the cork of a wide-mouthed bottle, which latter is partly filled with mercury, and which has a straight glass tube with millimeter scale attached also passing through the cork, and from this the degree of pressure is read. The other arm of the above-mentioned T

⁴ *Deutsche med. Wchnsch.*, No. 15, 1900, quoted by Shaw.

⁵ *Journ. of Ment. Sci.*, October, 1900. *Lancet*, No. 4069, Aug. 24, 1901. *Lancet*, No. 4114, July 5, 1902.

is connected by rubber tubing with a pressure bulb, such as is used on a Paquelin cautery. There is also a branch from the first tubing closed by a pinch cock, by means of which the air is allowed to escape from the instrument after the observation has been made. To operate the apparatus, the arm band is fastened about the patient's arm above the elbow, the radial pulse is palpated, and air is forced into the apparatus by means of the pressure bulb. The height of the column of mercury at which the pulse disappears is noted, the pressure carried slightly beyond, the air slowly allowed to escape, and the height of the column of mercury at which the pulse returns is noted, and the mean of these two observations gives us the systolic pressure. Some observers only note the point where the pulse disappears, others only the point where it reappears. Either is correct but taking both secures accuracy. Recently Dr. Cook^{*} has described this instrument in a less home-made form, and discusses its manipulation very fully.

Stanton[†] has devised a very similar apparatus, which seems to have certain advantages over the Riva-Rocci though practically differing from it only in the width of the arm piece and in using a foot pump to obtain the necessary air pressure. By means of his apparatus he is able to obtain both the systolic and diastolic pressures, and from them calculate the mean pressure. I have tried his method with the Riva-Rocci apparatus with an assistant at the air pump, but was not able to obtain satisfactory readings of the diastolic pressure, due, I think, to the narrow arm piece, which Stanton considers the great defect of the Riva-Rocci apparatus. Jackson[‡] has compared the Riva-Rocci with the Gaertner, and finds that they give uniform results except in cases of arterio-sclerosis, where the former instrument reads too high. In regard to the presence of arterio-sclerosis as a complicating factor I wish to call your attention to a very interesting article by Dr. Clifford Allbutt, on "The Rise of Blood Pressure in Later Life,"[§] in which he says: "In

^{*}Journ. Amer. Med. Assoc., Vol. XL, p. 1199, May 2, 1903.

[†]Univ. of Penn., Med. Bull., February, 1903.

[‡]Bost. Med. and Surg. Journ., Vol. CXLVII, p. 223.

[§]The Lancet, No. 4149, Vol. CLXIV, March 7, 1903.

sufferers from arterio-sclerosis—I use the name arterio-sclerosis loosely for present convenience—exorbitant pressures are often but by no means constantly found. Between disease of the arterial tree and blood pressure there is no direct relation, in arterial disease, even in the extreme degree of it, normal or relatively low pressures are commonly observed; but I often notice that in cases of arterial degeneration the reading extends uniformly over a wider range of the scale, say, over 15 or 20 units, in which cases I record the mean figure and the extremes. In denying that elevation of blood pressure depends directly upon arterio-sclerosis, I have stood alone for some years against the high authority of von Basch and many others; but I think that some recent observers now admit the validity of my contradiction and the matter is one of cardinal importance.”

Since our introduction to the Riva-Rocci instrument we have taken a great many blood-pressure observations with a view of determining the value of such observations in mental diseases both as an aid to diagnosis and to treatment. It is the object of this paper to present the results which we have hitherto obtained. At first a number of single observations were made on a number of patients, but we soon realized that by such methods accurate results could not be obtained, and it was thought that if we regularly measured the blood pressure of several cases during the whole course of their mental alienation with the changes which probably took place as recovery, or other change occurred, that we would have more instructive and more accurate data. It will be remembered that the Riva-Rocci apparatus shows the systolic pressure, and this, I think, serves our purpose sufficiently well.

As we did not wish to go to the expense of having charts for blood pressure made until we became satisfied with the form, we have used squared ruled paper, which the nurses have divided as indicated. Also, for convenience, the observation has been recorded on a scale of fives, which gives approximate results. Should we consider the plan hitherto pursued sufficiently valuable to continue, we will have the blood-pressure scale divided into millimeters. We have had charts made of the blood pressure, mental and motor condition, the condition of the skin, and the pulse, in all the cases which have been under continuous

observation, and in certain cases the temperature and respiration has also been noted on the regular chart. A sample chart is appended. For convenience of consideration the results of these observations have been tabulated in the case abstracts which follow. Cases with arterio-sclerosis or with organic heart or kidney disease were not observed at first, as they would necessarily impair the results. The position of the mental and motor curves is indicated by plus or minus, the average position being normal in a few instances, and in a few others varying to such an extent that plus and minus seemed the best method of indication.

It is extremely difficult to indicate graphically the curve of mental activity in the majority of cases, and I feel that in a number of our cases a plus condition is shown incorrectly. The nurses as a rule seem to regard insane ideas as a plus condition and to lose sight of any underlying dementia which is not especially marked. This is shown in Case III, in Case VIII in part, and Cases XII and XV. Further, the mental activity may be more or less obscured by the emotional condition. The best solution seems to be to discard both motor and mental curves and substitute for them brief descriptions of the patient's mental condition and habits of living. In the notes which follow I have given the nurse's conception of the position of the curve. It must be remembered that these blood-pressure readings have been taken in an ordinary way, just as temperature, pulse, and respiration observations are often made. No attempt was made to isolate the patient from sights or sounds which might affect the reading, nor was the patient made to lie down if she was up and about, as it was desired to test the value of blood pressure observations as an ordinary clinical procedure. However, nearly a third of them were made while the patient was in bed. While observers differ as to the effect of posture on the blood pressure, the consensus of opinion seems to be that we find a higher blood pressure when the patient is in a sitting position than in a recumbent one. The factor of posture may be ignored in a given case when all observations are made when the patient is in one position, that is, either sitting or lying, but in comparing cases this factor should be considered. One conclusion to which we came was that the continuous taking of the blood

pressure has but little value in the majority of mental cases, and the plan has been adopted of taking it for a limited period, then discontinuing it and taking it again for another period whenever we felt there was a change in the motor or mental condition of the patient. I believe that the average of a week's observations gives as accurate a measure as when they are continued for a longer period. Frequently the first two or three observations are higher than the others, due possibly to an element of fear in the patient, so that I am not satisfied that one or two accurately show the blood pressure.

Case I. No. 824. Woman aged twenty-five. Had an attack of depression September, 1897, to May, 1898. Present attack is excitement, and began about May 10, 1901. She was discharged from the hospital July 19, 1902, and completed her recovery at the seashore. Urine showed slight trace of albumen, no casts. Heart normal.

Date.	Mental Curve.	Motor Curve.	Av. B. P.	No. Obs.
January 22-31	+	+	101.6	38
February 1-17	+	+	109.5	57
February 18-March 9...	+	+	110	78
March 10-April 8.....	+	+	106.4	101
May 1-16	+	+	117.78	61
May 17-31	+	+	109.66	59
June 1-10	+	+	111.12	40
June 11-30	+	+	110	56
July 1-15	+	+	111.5	60
July 16-19	+	+	109.5	12

At 8 A. M. of the day of her discharge the blood pressure was 135, and there was a greater degree of motor restlessness.

Case II. No. 544. Woman aged twenty. Diagnosis, dementia præcox. Had been an inmate of the hospital since Oct. 31, 1898. Her mental trouble dated from the winter of 1895-96. Heart irregular and shows hemic murmur. At one time urine showed albumen, no casts. Has sudden attacks of violence.

Date.	Mental Curve.	Motor Curve.	Av. B. P.	No. Obs.
March 15-29	—	—	124	15
March 30-April 12.....	—	—	131	14
April 14-19	—	—	125.8	6
May 1-31	—	—	120	31
June 1-28	—	—	118.8	22

Case III. No. 798. Woman aged twenty-six. Admitted to hospital March 29, 1901. Present is third attack, the first being in 1890 and lasting several months, the second lasting from October, 1892, to December, 1893. Onset of present attack was about Dec. 25, 1900. Is now in a demented condition. Heart rhythm somewhat disturbed, otherwise negative. Urine showed trace of albumen, no casts.

Date.	Mental Curve.	Motor Curve.	Av. B. P.	No. Obs.
February 1-16	—	+	141.93	15
February 17-March 4...	—	+	149.87	16
March 5-19	—	+	146	15
March 20-29	+	+	135	19
March 30-April 8.....	+	+	141	18
April 9-18	+	+	137	16
May 5-8	+	+	136	7
May 9-18	+	+	133	19
May 19-28	+	+	133	20
May 29-June 7	+	+	129	20
June 8-17	+	+	130	20

Case IV. No. 924. Woman aged forty-one. Admitted to the hospital April 24, 1902. Shows depression and mental confusion with a good deal of motor excitement. Patient had a similar attack at twenty-one years, lasting three months. Has been mentally unstable ever since. Her present illness began eleven days before admission.

Date.	Mental Curve.	Motor Curve.	Av. B. P.	No. Obs.
April 30-May 12	none	+	154	25
October 9-31.....	+	+	116.63	46

Discharged from the hospital Jan. 19, 1903, improved.

Case V. No. 917. Woman aged twenty-nine. Mental symptoms began February, 1902. Patient was admitted to the hospital April 14, 1902. Was removed against advice June 9, 1902, and readmitted July 11, 1902. Patient was depressed, emotional and exhibited great motor restlessness. Heart negative. No arterio-sclerosis. Urine negative.

Date.	Mental Curve.	Motor Curve.	Av. B. P.	No. Obs.
July 16-August 7.....		+	108	45
August 7-31		+	109.6	45
August 31-September 21.	—	+	112	45
September 22-Oct. 13...	—	+	118.7	39
October 14-November 5.	—	+	118	46
November 6-28	—	+	113	47
November 29-Dec. 21...	—	+	119.5	41
December 22-Jan. 13....	—	+	115	30
Jan. 14-Feb. 3.....	normal	nearly normal	128	40

Patient was discharged Feb. 3, 1903, much improved.

Case VI. No. 977. Woman aged twenty-seven. Has appearance of being ten years younger. Patient had typhoid fever at fifteen and twenty-four. Was brought to the hospital Sept. 27, 1902, from Danville Sanitarium, where she had been since March, 1902. Is in condition of incomplete dementia, with attacks of sudden violence. Heart negative. No arterio-sclerosis.

Date.	Motor Curve.	Mental Curve.	Av. B. P.	No. Obs.
Sept. 30-Oct. 21.....	normal	+	125.54	37
Oct. 22-Nov. 12.....	+	+	123.42	38
Nov. 13-Dec. 4.....	—	—	113.72	43
Dec. 5-26	—	—	114.75	41
Dec. 27-Jan. 17.....	—	—	117.2	27

Case VII. No. 979. Woman aged twenty-six. There is an indefinite mental history dating back six years to the time of her graduation from the high school. She has been teaching in the public schools from that time until Jan. 1, 1902, when active mental symptoms were noticed. Was brought to the hospital Oct. 12, 1902. Heart negative. No arterio-sclerosis.

Date.	Motor Curve.	Mental Curve.	Av. B. P.	No. Obs.
Oct. 12-Nov. 7.....	+	—	120.6	44
Nov. 8-30	±	—	118.47	46
Dec. 1-23	—	±	127.12	37
Dec. 24-Jan. 15.....	—	+	126	39
Jan. 16-28.....	+	—	120	24

Case VIII. No. 946. Woman aged fifty-one. Admitted to the hospital June 16, 1902, after attempting suicide. Mental symptoms had been noticed five weeks before admission. Had transitory delusions. Was depressed, restless and emotional, and at times much confused. Patient improved quite markedly up to a certain point where she had frequent emotional attacks, and begged to go home. Heart negative. No arterio-sclerosis. Urine showed a trace of albumen, no casts.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
July 16-Aug. 3.....	+	+	106	26
Aug. 4-25	+	+	114.5	40
Aug. 26-Sept. 16.....	+	+	124	41
Sept. 17-Oct. 9.....	+	+	125.1	39
Oct. 9-31	+	+	128.4	44
Nov. 1-22	+	+	123	45
Nov. 23-Dec. 15.....	+	+	111.47	44
Dec. 16-Jan. 6.....	+	—	115.7	37
Jan. 7-29	+	—	115.3	29

Case IX. No. 999. Woman aged thirty-two. Admitted to the hospital Dec. 10, 1902. Mental symptoms date back two years to the birth of her last child. Depression and self-accusation were the most marked symptoms. Had twice attempted suicide. Heart negative. No arterio-sclerosis.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Dec. 13-Jan. 4, '03.....	—	—	120.4	38
Jan. 5-27	—	—	121.34	46
Jan. 28-Feb. 19.....	—	—	118.24	37

Case X. No. 988. Woman aged twenty-one. Admitted to the hospital Nov. 9, 1902. Became exalted over religious matters about a year before, since which time she has become depressed and thinks she has committed the unpardonable sin. Heart negative. No arterio-sclerosis. Urine negative.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Nov. 11-Dec. 3.....	—	—	109.63	46
Dec. 4-26	+	—	101.74	46

Case XI. No. 1003. Woman aged fifty. A case of well-marked neurasthenic depression. Admitted to the hospital Dec. 29, 1902, her mental symptoms dating back several months. Heart negative. No arterio-sclerosis. Urine negative. Patient left hospital March 2, 1903, against advice, slightly improved.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Jan. 6-28	—	—	111.3	46
Jan. 29-Feb. 21.....	—	—	106.74	43

Case XII. No. 1009. Woman aged twenty-seven. Mental symptoms about a year before admission, which was Jan. 15, 1903. Is well-marked case of dementia præcox with incomplete dementia. Heart sounds slightly dulled. No arterio-sclerosis. Urine negative.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Jan. 28-Feb. 20.....	+	+	126.13	44
Feb. 21-27	+	+	122.3	13
March 28-April 2.....	+	+	122	10

Case XIII. No. 1008. Woman, aged twenty-six, admitted Jan. 15, 1903. The patient has marked *flexibilitas cerea* and other physical symptoms of the katatonic form of dementia præcox. Mentally, however, while she has shown improvement, insane ideas are pretty well marked on careful investigation, and the case is undoubtedly one of precocious dementia. Heart negative. No arterio-sclerosis. Urine negative.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Jan. 28-Feb. 19.....	—	—	108.2	41
Feb. 20-March 14.....	—	—	108.3	42
March 15-17	—	—	108.3	24

In connection with this case it is interesting to note that Anton²⁰ in a study of three cases of brain disease with katatonia, found low blood pressure in two of them.

Case XIV. No. 1018. Woman, aged twenty-three, admitted Feb. 25, 1903. Mental symptoms dated back about seven months, but did not become sufficiently marked to demand hospital care until about a month and a half before admission. There has been rapid retrogression, and the case is evidently one of dementia præcox. Heart negative. No arterio-sclerosis. Urine negative.

Date.	Motor.	Mental.	Av. B. P.	No. Obs.
Feb. 26-March 20.....	+	—	122	43
March 21-27	—	—	124.6	13

The following abstracts are from cases in which the blood-pressure observations were not carried over so long a period, and have been taken usually in cases which were not so recent or were not

²⁰ Anton, G. Ueber Gehirnerkrankungen mit Katatonie. Mittheilung des Vereins der Aerzte in Steiermark, 1902.

undergoing any marked changes, or in other words, were more or less stationary.

Case XV. No. 655. Woman, aged thirty-four, has been under care since Dec. 30, 1899. Is a well-marked case of dementia præcox, with considerable motor activity. Is usually elated mentally. Heart negative. No arterio-sclerosis. Urine negative. Blood pressure observed March 24-30, 1903, averaged 122.7 mm., the mental, motor, and pulse curves all being plus.

Case XVI. No. 905. Woman, aged twenty-two, admitted March 18, 1902. Case is one of well-marked dementia præcox, with sudden impulses. Heart shows mitral stenosis, which improved while she was under care. No arterio-sclerosis. The day of admission patient's blood pressure was 140 mm., and six days later was 146 mm., the patient lying quietly in bed on both occasions. Her mental condition was depression. Blood pressure observed March 1-15, 1903, averaged 124.4 mm., motor and mental curves both being plus.

Case XVII. No. 78. Woman, aged thirty-two, has been in the hospital for ten years. Original diagnosis chronic mania but now in a condition of incomplete dementia. Heart negative. Arteries somewhat sclerotic. Urine shows trace of albumen and a few epithelial casts. Blood pressure taken March 8-14, 1903, averaged 139 mm., motor and pulse curves plus, mental minus.

Case XVIII. No. 380. Woman, aged forty-seven. Case of imbecility with marked auditory hallucinations causing considerable excitement. Has been in hospital six years. Heart shows a systolic murmur transmitted to the axilla. No arterio-sclerosis. Urine shows trace of albumen. Blood pressure taken March 8-14, 1903, averaged 142 mm., motor, mental, and pulse curves all being plus.

Case XIX. No. 1010. Woman, aged forty-six, admitted Jan. 15, 1903. Her attack began suddenly May 16, 1902, following death of her child, the patient being much run down from nursing. The first symptoms were excitement, followed by depression, which was in turn followed by a confused, agitated condition, during which she was brought to us. She at present (April 11) has improved slightly both physically and mentally. Heart negative, no arterio-sclerosis. Urine negative. Blood pressure observed March 8-14, 1903, averaged 121.5 mm., motor and pulse curves being plus, the mental minus.

Case XX. No. 947. Woman, aged fifty, admitted June 20, 1902, depression having become marked about two months before admission. Somato-psychic delusions early became prominent, and at present are the most marked symptoms. Heart shows no murmurs. Arteries are diffusely sclerotic. Urine shows a trace of albumen. At one time pulse was high tension and a course of nitrates and nitrites caused a marked change without however, any accompanying mental change. Blood pressure was taken for

the first week of March, 1903, and averaged 140 mm., motor and mental curves both being plus.

Case XXI. No. 959. Woman, aged twenty-one, admitted Aug. 3, 1902. The silliness of dementia præcox is most marked. At admission was in a condition of excitement, which has since subsided. Heart shows slight systolic murmur transmitted to axilla. No arterio-sclerosis. Urine negative. Blood pressure observed from March 26 to April 2, average 124.3, motor curve being plus, mental minus.

Case XXII. No. 908. Woman, aged sixty-nine, admitted to the hospital Sept. 2, 1899. Is an involution case with slight dementia. Heart and kidneys negative. No arterio-sclerosis. Blood pressure observed from March 1-17, average 127.69, motor curve plus, mental minus.

Case XXIII. No. 908. Woman aged forty-four; a case of epileptic insanity. Dementia is very slight. Heart shows systolic murmur transmitted to the axilla. Urine negative. No arterio-sclerosis. Blood pressure observed March 1-7, average 132.2, motor curve plus, mental minus.

Case XXIV. No. 936. Woman aged fifty-six. Case of melancholia "agitata." Heart negative. Urine shows trace of albumen. No arterio-sclerosis. Blood pressure observed March 24-30, averaged 131.6, motor curve plus, mental minus, pulse plus.

Case XXV. No. 1031. Woman aged forty. Recurrent melancholia. Had previous attacks six and four years ago. On admission was depressed with marked motor activity. Under treatment has improved. Heart negative. Urine shows trace of albumen. Slight arterio-sclerosis. Blood pressure has gradually fallen from 140 to 120, averaging 127.6 for the three weeks observed. The motor curve has gradually fallen and the mental curve has gradually increased.

While on following down the blood-pressure column I am unable to find the point where there was any change sufficiently marked to be noticed, which corresponds with any mental change, and on going over the charts I am also unable to find any constant ratio, either direct or indirect between the motor, mental and blood-pressure curves, nevertheless, I feel that these observations have their value, and in the data given above we find the general ratio is usually the same as that found by other writers; namely, that the average blood pressure is low in motor restlessness, or in mental excitement, and high in depressive conditions, or in cases where there is diminished mental activity. The blood pressure depends on so many factors that it is not surprising if we find occasional cases in which it does not accord with the usual observations. Some other factor which we may have overlooked may have caused the changed ratio, or our own

observations may be at fault. For example, in certain cases with mutism I have had great difficulty in deciding whether there was increased mental activity or not.

A dry and moist skin seems to have no effect, and I think that the cases observed by Kornfeld¹¹ must have been actively perspiring to have had any marked influence upon the blood pressure.

Schaeffer and a number of others have observed that the blood pressure was lower in the evening than in the morning, and have considered this a physiological variation. One writer gives this daily physiological fall as the reason that patients suffering from depression usually feel better at night, and the maniacal patients are usually worse. In our own observations the daily variation has been very inconstant. The morning and evening observations have frequently been the same, and the evening pressure has been higher than the morning quite as often as the reverse.

Briefly the conclusions based upon the present study may be stated as follows:

(1) The findings of other writers that (a) the blood pressure is increased in depressive states and decreased in excited states; and (b) that the motor condition has a greater influence on the blood pressure than does the mental condition have been confirmed.

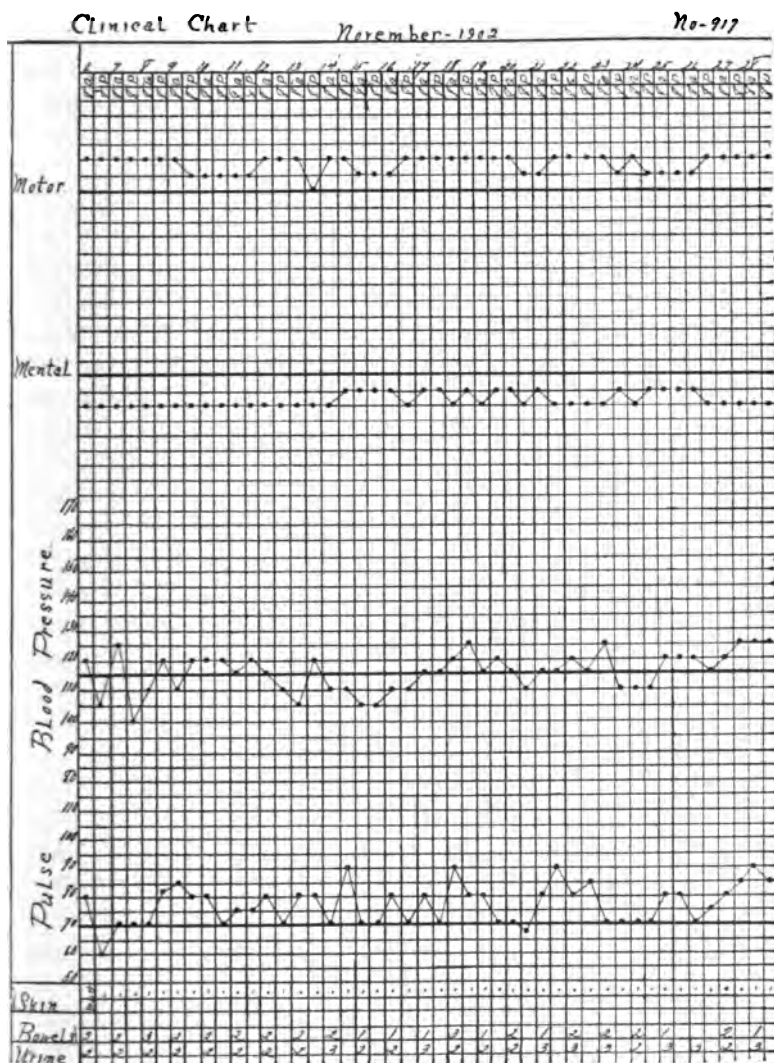
(2) A moist skin has no especial influence upon the blood pressure, although active perspiration may.

(3) There was no constant variation, as has been noted by Schaeffer and others.

I feel that further conclusions are not justified by the cases presented here and others which are in a too incomplete state to justify publication. This paper will have fulfilled its mission if others are stimulated to observe blood pressure.

Too much importance should not be ascribed to this symptom. Its accurate observation has its value, and will probably have a greater value later when we have a better knowledge of how it is influenced by various bodily conditions. The general clinicians are adding to this, and we should do our part by observing how it is influenced in mental affections.

¹¹ Kornfeld, Sigmund. Zur Pathologie der Angst. Festschrift Dr. v. Kraft-Ebing, p. 411, 1902.



Showing blood pressure, motor and mental chart reduced four times. Since the preparation of this paper, these charts have been amended so that the lines above and below the normal (motor and mental) lines signify a definite condition (quiet, restless, excitement, etc.), but so far an entirely satisfactory arrangement has not been obtained.

CHARACTERISTICS OF THE SCOTCH LUNACY SYSTEM.

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The Scotch Lunacy System was formulated in the Lunacy Act of 1857, and represents the progressive development of nearly half a century. Its basic principle imposes responsibility for the general interests of the insane upon the central government, reserving to it the powers necessary to conserve them, but constituting local authorities the executives in direct dealings. Its application is well exemplified in the method prescribed for ensuring adequate accommodation for such.

For the purpose of pauper lunacy administration, Scotland is divided into twenty-seven districts, each having a representative board, appointed from members of certain elective bodies and charged with duties similar to but rather more extensive than those of trustees of our institutions. The need of each lunacy district as regards such accommodation may be determined by the General Board of Commissioners in Lunacy and intimated to the District Board, whose duty requires it forthwith to prepare plans, specifications, estimates of cost, and, should a new asylum be projected, to express its opinion as to a suitable and eligible site.

Such preliminaries having been arranged to the satisfaction of the General Board, the latter may proceed immediately to assess the gross cost upon the lunacy district, whose proper officers are in duty bound to collect and pay over the whole amount within eight months to the local board, which must complete the undertaking within two years. Should the District Board fail to act, the General Board may represent such failure to one of His Majesty's principal secretaries of state, who may authorize application to the Court of Sessions for the appointment of a person to exercise all its powers in this relation at the expense of the district.

Although there may be in this a potentiality of arbitrary action hardly permissible in this country, there is good reason to believe that the wise and discreet use of such power has largely eliminated the evil of overcrowding in Scotch asylums.

Authority of the government centers in a General Board of Commissioners in Lunacy, composed of three unpaid and two paid members, assisted by two paid deputy commissioners. The latter four are physicians, who devote their entire time to the service.

In advisory and supervisory capacity their duties are analogous to those of the Massachusetts Board of Insanity and other similar commissions, but their direct functions are important and comprehensive.

They may initiate investigation in any case arising under the Lunacy Act, and may summon witnesses to testify under oath.

The boundaries of lunacy districts may be readjusted to changing conditions, according to their judgment.

Within their discretion are the granting and revoking of all licenses to care for the insane in private asylums, lunatic wards of poorhouses and private dwellings.

They constitute a court of appeal for the arbitration and settlement of differences arising between parish and district authorities or asylum officials.

In matters of commitment, detention and discharge of patients the provisions of the Lunacy Act are strikingly similar to those observed in Massachusetts, suggesting our model of imitation. A few of the more notable exceptions may be presented.

Any qualified medical officer of a *public* asylum may grant a certificate of insanity in the commitment of a pauper to said asylum, but not of a paying patient, although other physicians are prohibited from so acting with a reference to any asylum in which they have an immediate or pecuniary interest.

The superintendent of any asylum, public or private, may receive or detain any person as insane, for a period not exceeding three days, whose case is duly certified as one of *emergency* by *one* qualified physician, who may be a medical officer of the asylum concerned.

Authority of detention conveyed by an order of commitment ceases three years from the first day of January next following

admission of the patient, and annually thereafter, unless there shall be transmitted to the General Board of Commissioners in Lunacy a certificate by the superintendent "on soul and conscience" that further detention of the patient is "necessary and proper either for his own welfare or the safety of the public."

The General Board may, on application of the proper person, issue a permit for a patient to leave an asylum on probation "for such time and under such regulations as it may consider necessary or proper," and to return without new commitment at any time within the specified period.

The last two provisions are in harmony with my observation in Scotland and on the continent, that zeal in restoring suitable patients to community life is greater there than here.

The voluntary relation of patients to asylums is encouraged by authorizing any superintendent, with previous written assent of one commissioner, to "entertain and keep" "as a boarder any person who is desirous of submitting himself to treatment, but whose mental condition is not such as to render it legal to grant certificates of insanity." Such cannot be restrained longer than three days after giving notice of intention or desire to leave.

The early treatment of the acutely insane, without resorting to commitment, is facilitated by allowing such to be received into unlicensed houses for "temporary residence only, not exceeding six months," on the certificate of one qualified physician that the mental affection is not confirmed and such temporary care is expedient with a view to recovery.

Otherwise, registration of the insane is so thorough that few escape official notice.

Every inspector of the poor is required on penalty of £10 to report the name and location of any pauper lunatic who comes to his knowledge within his district.

Supervision extends over all private patients having property under curatory. Other private patients are not exempt unless they are cared for in their own homes or elsewhere without compensation, and are not harshly or cruelly treated, and, if insanity has existed longer than one year, are not subject to "compulsory confinement to the house or restraint or coercion of any kind."

The high ratio of visible insanity is thus partially explained. Over sixteen thousand of four and one-half million inhabitants

are registered as insane—I to 281, against 1 to 308 in Massachusetts. In forty-five years the general population has increased 50 per cent, the insane 186 per cent, more than three and a half times as fast.

With the exception of fifty insane criminals in the lunatic department of the General Prison, they are distributed in five locations: 10 per cent in licensed wards of eighteen poorhouses; 17 per cent in private dwellings; less than 1 per cent in three private asylums; 26 per cent in seven royal asylums; and 46 per cent in sixteen district asylums.

During the last decade there has been a retrograde movement from private asylums and poorhouses to the extent of 20 and 32 per cent respectively; a nearly stationary condition in royal asylums and private dwellings, and a strong current toward the district asylums, whose inmates doubled.

Lunatic wards of poorhouses are always separate from the quarters of other classes, and, if the quota of insane exceeds 60, must be in detached buildings.

A license, revocable at will, must be issued by the General Board of Commissioners directly to the governor of the poorhouse, which lapses at the termination of his service and requires annual renewal. He is made personally accountable for carrying out its provisions, which relate specifically to the care and treatment of patients, their dietary, the housekeeping and ward furnishings.

Admissions in each case must have the sanction of the General Board, and are restricted to the harmless and incurable, with the exception of the three parochial asylums, which receive the curable and dangerous also.

A physician must be resident for more than 100 inmates, and his visitation daily for 50 to 100, and bi-weekly for a less number.

The unique feature of the Scotch regime pertains to family care, in which are 17 per cent of all registered insane, 20 per cent of pauper insane; in round numbers, 2800 patients, enough to fill six district asylums of average size, distributed among more than 2000 families, in every county of Scotland. Two counties thus provide for 44 per cent of their insane wards; two others, 40 per cent, and so on, down to 7 per cent.

Such has been the growth of many years. The beginning

seems to have been the registration of defectives in private dwellings at the inauguration of the Lunacy Act, in order to bring them under supervision without formality of commitment. The practice has continued to the present, affording institutions relief from admission of many whose commitment poverty would otherwise have compelled. A thousand patients under family care, or 37 per cent, have never been inmates of asylums. The enrollment of 1902 contains 106, or 40 per cent. They usually remain with relatives, whereas others from asylums are boarded with strangers in most cases.

Last August I had the pleasure of seeing some of these patients in families in several villages in the county of Fife, where conditions are more favorable than in the western and highland districts, although I was assured and feel confident that they are always as comfortable for the patients as for the people in the neighboring communities.

In the main the patients were quiet, inoffensive, demented or feeble-minded, and manifested no special eccentricities in manner or appearance. One woman sat alone in her room, silent and downcast, being at night restless and noisy, to the discomfort of her room-mates. She was a newcomer, and considered unsuitable by her guardian, but her gradual improvement seemed to justify the parish doctor in delaying her return to the asylum in the hope of ultimate success.

A single bed-room, of moderate size, with one window, is usually assigned to the use of all the patients together, who sleep in separate beds arranged in niches in the walls. They suffer no greater crowding than other members of the family, and share all their comforts and privileges, as a rule.

The guardians appeared to be kind-hearted and respectable. Their motive for the work is evidently thrifty, but not unworthy. One was observed to be a prosperous farmer, who kept twelve cows and several horses, being greatly assisted in their care by his three able-bodied male boarders.

Several spinsters till small gardens with the help of their female wards, but everywhere their robust health, good nutrition and contentment assured me that the benefit was mutual. I was told by an inspector who had been familiar with the system for

twenty years that the relation often extended over long periods, and led to strong attachments between patients and guardians.

One could wish to see fewer young children brought into such association, but care is taken to avoid it so far as possible.

The families which I visited averaged three patients each, but the general average is only 1.25, 1659 having one, 334 two, 117 three, and 45 four. Restriction to one or two in a home is favorably regarded, as offering the best chance of sharing the family life.

The patients are widely scattered, and never permitted to become so numerous as to assume a distinct caste in the community, a striking contrast to Gheel, where 1800 insane are boarded with 95 per cent of the families of six or seven villages having a total population of 13,000, being one to seven, or 14 per cent. The greater difficulty of supervision is obvious, the inherent weakness of the system. However, good safeguards have been adopted.

The Deputy Commissioners in Lunacy inspect twice yearly, and are experienced counsellors to all. The inspector of poor sees them quarterly, as the agent of the parish to which they are chargeable for support. The parish doctor calls regularly every three months, oftener if illness requires, and receives a special fee for each visit, an inducement to the faithful discharge of this duty.

In the selection and control of families the key to the situation is held by the General Board, whose sanction must be obtained by each one, from whom it may be withdrawn at any time.

Three factors are operative in forwarding the system. The General Commissioners afford suggestive and sympathetic oversight, stimulating the interest and co-operation of asylum superintendents and parish officials. They are actuated by the highest motives, firmly believing that the welfare and happiness of patients are promoted and overcrowding in asylums is lessened. The asylum superintendents control the selection of patients, and might seriously obstruct progress if they should not accept the theory that the primary functions of asylums are curative and custodial, and simpler methods are appropriate in the care of those who are suitable to live without. But whatever the attitude of the General Board or of the superintendents, inertia would be inevitable unless adequate incentive were presented to local author-

ities, who have the initiative, and must assume no small additional burden in the management of family cases.

Such incentive arises out of pecuniary saving to the rate-payer. The weekly asylum rate for maintenance for 1902 was \$2.59. Incredible as the claim may seem at first blush, I was told that the county of Edinburgh saves three shillings a week on each of its 343 charges in private dwellings, or the sum of \$13,000 annually, although its family care rate is highest of all the counties, exceeding the mean by nearly two shillings. The average saving to parishes in 1902 was \$1.03 weekly per patient or 40 per cent, amounting in the aggregate to over \$140,000. A moderate deduction should be made for cost of clothing, medical attendance, and visitation by parish officers, and, in a computation of the ultimate cost to rate-payers, allowance should be made for salaries and expenses of the two Deputy Commissioners in Lunacy, which are not directly chargeable to the parishes.

However, on the other side of the account should be added the interest on the investment necessary to establish and keep in repair six asylums of average size which would be necessitated in housing family-care patients. Such economic result is extraordinary, and could not, in my judgment, be paralleled in this country.

The prototypes of Scotch institutions for the insane are the Royal Asylums, which represent in Scotland the McLean, Butler and Concord Hospitals of New England. They were founded and endowed mainly from private benefactions, but, with two exceptions, received aid at the outset by contributions from parochial treasuries. Chartered and governed as corporations, they are pre-eminently private establishments, although three-fifths of their inmates are dependents from neighboring parishes, by which they are supported at a fixed charge slightly in excess of the district asylum rate. Nearly a thousand patients are cared for at "Morningside," or Aberdeen, but 600 equals the average capacity.

They are beautifully environed, usually occupying some old estate of ample acreage, with broad lawns set with many trees, shrubs and flowering plants, in the midst of which stand massive blocks of houses of brick or stone, whose original compact arrangement is gradually disappearing in renewal and extensions

on the segregate plan, with small units and wide intervening spaces. Especially marked is this tendency in the recent development of the Royal Crichton institution, at Dumfries, under the able direction of its progressive superintendent. Nowhere else, not even at Alt-Scherbitz nor the newest example of German colony at Galkhausen, did I observe so complete a differentiation of classes and independence of administration. This old and rich asylum is being rapidly reconstructed, according to hospital and colony ideas more extreme than are generally accepted in Scotland, and requiring larger resources than are commonly available, yet presenting the essentials of the general trend of progress.

The first distinction is drawn here, as elsewhere, between private and pauper patients, in two main groups, eventually to be separated by a considerable distance. Present activity pertains to the division for indigent cases. There were in process of construction at the time of my visit two fine reception hospitals, one for either sex, each designed for 40 patients, located about 100 yards apart, and identical in interior plan but differing architecturally.

The first story is divided in halves by a broad corridor, communicating in front, on the one side, with a reception ward of 16 beds with 4 single bed-rooms adjoining, and on the other with a ward for 20 convalescents. In the rear is commodious provision for office of resident physician, history taking, reception and examination of patients, their observation and temporary care. The dining-room is adjacent to the convalescence ward and the kitchen, the latter isolated in a back corner.

The second story furnishes a patients' dormitory and living room for officers, nurses and servants, so arranged as to afford suitable separation.

Both hospitals would be in charge of a woman physician, resident in the men's department. The matron, being also head nurse, would hold a similar relation to both, living in the women's department. During the day all nurses would be women, except on the convalescent ward, where selected male nurses would be on duty continuously, and at night throughout the men's hospital.

A new patient would be taken at once to the reception room, with associated bath, and receive the customary attention, after

which she would be put to bed in the observation and examination room. Thereafter the physician, having meantime withdrawn the friends into the history room and obtained an account of the patient's illness and past, would make a physical and mental examination and decide whether she should remain in the care of a special nurse or be transferred to a bed in the reception ward.

So far as observed, preliminary bed treatment, of varying duration, is almost universal in Scotch asylums and on the continent, especially in the German psychiatric clinics, where it is frequently continued much after the manner of a general hospital.

The colony idea is finding expression in small industrial groups and home villas, each completely equipped with kitchen and dining-room. A farmsteading for 60 working patients has been established on the large farm of 850 acres; an equal number of women are associated in a house connected with the laundry and sewing rooms. Eight dwellings, each a home for 16 congenial patients, are distributed here and there throughout the extensive grounds. A pavilion for 20 tuberculous patients occupies a sunny corner somewhat remote from other groups.

A pleasant drive some eight miles out from Dumfries took us to Friar's Carse, a magnificent property of 650 acres, recently acquired, where a half score of wealthy patients were passing their convalescence in a fine old mansion with many historic associations. Presumably, here will be wrought out an appropriate scheme for private patients, in harmony with that developing at Crichton for the indigent.

My attention was here particularly drawn to another feature, more or less common to institutions abroad, which seems to me to contribute much to contentment and stability in their service. The efficient employee, desiring family life, is allowed to marry, being provided with three or four rooms at a moderate rental, or rent free, inclusive of heat, light, milk and vegetables, and receiving an increase of about 30 per cent in his wages in consideration of boarding at his own table. The wife is not usually employed. Arrangements have been made at the Crichton institution for 30 such families, some in large patients' buildings planned to afford independence, others in rows of six houses, and still others in cottages.

More than half the 650 patients in this asylum are private, paying as high as \$3000 per annum in some cases. The rate of maintenance approximates \$5 a week, about double that of district asylums, but not excessive for its class of patrons. The large annual surplus is expended in structural improvements.

The Royal Edinburgh Asylum at Morningside is so well known through Dr. Clouston as to hardly require allusion, even to its luxurious Craig House and associated villas, rivalling McLean in the excellence of its provision for private patients.

At Aberdeen the Royal Asylum stands in the heart of the city, and has only limited acreage of land devoted to recreation of patients, beautiful grounds and gardens; but some twenty miles out a farm of 200 acres is tilled for the benefit of the home establishment by 120 male patients. Here, in 1896, one of the earliest reception hospitals was erected for 230 patients of both sexes, organized and conducted after the general regime later described.

Passing from royal to district asylums one scarcely notes the transition, save in plainer environment and reduced scale of expenditure, continuing acutely conscious of enthusiasm, enlightened methods and progressiveness.

This form of public provision was inaugurated by the Lunacy Act, to supplement Royal Asylums or provide for lunacy districts to which they were not accessible.

The district asylum is the analogue of our State insane hospital, holding a relation to its district similar to that of the latter to the commonwealth. Both are essentially pauper institutions, the former hardly exceeding 3 per cent of private patients, and the latter 8 per cent. No discrimination is permitted, the private patient paying the same rate of board as the pauper, and receiving no preference as to room, diet, attendance or privilege. The average capacity is one-half that of our institutions, the maximum not exceeding 900.

Assessment is made upon the lunacy district as a whole for land, buildings, furnishings, equipment, improvements and repairs, but current expenses are met out of receipts from constituent parishes, each supporting its charges at a rate of board based on the actual cost of maintenance and determined from time to time by the district board, with the approval of the General Board of Commissioners, therefore varying in different asy-

lums and at different periods. During the last decade extension of accommodation for the insane has been practically confined to district asylums, whose patient population has increased 3498, or 100 per cent. Traditional Scotch thrift is manifest in the adequate response of the public to so great a demand. Overcrowding has not been allowed to supervene to any material extent, so business-like has been the method or so even and sustained the effort to meet the requirement.

It may be of interest to contrast results in Massachusetts, whose State institutions within the same period gained an average patient population of 3360, and in number of beds occupied about 2700, beginning with marked overcrowding, and ending with an increased shortage of 660 beds.

The total expenditures of district asylums for land, buildings, furnishings, equipment, improvements and repairs amounted to \$6,928,912, or \$692,891 annually, or \$1981 for each patient of increase in the average population, whereas our State institutions expended for the same objects \$2,996,798, or \$299,680 annually, or \$892 for each patient of increase in average population.

However, our efforts were spasmodic, and much more energetic during the last third of the decennium, so that time did not allow the expenditure of \$1,159,329 of the \$4,093,670 actually *appropriated* within the period for these objects, which include provision for 3450 beds at a gross outlay of \$1187 each.

The general conclusion may be fairly drawn from the above that Scotland spent considerably more than Massachusetts, proportionately, in providing and keeping up establishments for the pauper insane.

The quality of its construction is more substantial than ours, especially during the recent development of our colonies, but I gained the impression that the cheapening tendency is appearing there, particularly in the more densely populated centers.

The new colonies projected for the counties of Edinburgh and Aberdeen are estimated to cost about \$1000 per bed. During the last three years 2053 beds have been provided for at our different institutions at an average of \$616 for patients' buildings and their furnishings, or \$1041 for all extraordinary expenditures, inclusive of repairs and improvements out of current income.

Turning to comparative cost of maintenance, we find the aver-

age weekly rate in district asylums to be \$2.36 for the decade, rising to \$2.54 for the last two years, indicating an advancing tendency which has been more than equalled here.

In conformity to the Scotch rule, repairs and improvements having been eliminated, the corresponding rate in our five State hospitals, Worcester and Medfield asylums, was \$3.30 for the last two years, an excess of seventy-six cents over the district asylum rate. The chief components compare thus:

Food	\$1.010	there;	\$0.996	here.
Fuel	0.235	"	0.335	"
Salaries and wages.....	0.678	"	1.269	"
All other current expenses.....	0.617	"	0.700	"
<hr/>				
Whole rate.....	\$2.54	"	\$3.30	"

The average prices paid by district asylums in 1902 were: Fresh meat, \$0.1125 per pound; fresh fish, \$0.0425; butter, \$0.2075; sugar, \$0.036; flour, \$4.25 per barrel; coal, \$2.83 per ton. Our greater expenditure for fuel is proportionate to the higher price of coal under normal conditions, raised during this period because of the anthracite coal strike. The relative number of employees probably does not differ materially in the two countries, but our scale of wages is about twice as high. Thus, nurses receive at the outset, in addition to board and lodging, single men, \$12.50 per month; women, \$7.50; a carpenter, \$375 per annum; mason, \$400; engineer, \$500. The ratio tallies with the difference in cost of service.

The disparity in all other current expenses is eight cents a week in favor of district asylums, which may be offset by our more expensive care of private patients, who number thrice as many, yield six times the relative income, and raise the support rate twenty-two cents.

The excellence equals the economy of these institutions. They are pervaded by a kindly, democratic spirit, considerate alike of patient and employee, appreciative of the idiosyncrasies of individuals, and resourceful in avoiding incompatibility, restraint, seclusion and other forms of coercion.

Clinical and executive duties seem to chiefly engage the attention of physicians, so that scientific work is less prominent than in German asylums, where one always finds a well-equipped labo-

ratory, wherein the medical officers are seen busy in research of varied character. However, the average German staff is twice as large, and usually more stable and experienced. A quickening in this direction is perceptible. The laboratory of the Scottish Asylums in Edinburgh is giving a good account of itself. Maintained by voluntary contributions from royal and district asylums, it affords them facilities for special instruction and investigation.

Local laboratories are springing up, as at Woodilee, where a very complete and satisfactory building for this purpose is being erected at an outlay of £2500. Several times I noted the appointment of pathologists, junior assistants and medical internes, after the custom of most of our hospitals.

It was gratifying not to hear, as a rule, the common complaint of an unstable and unsuitable staff of nurses. They appeared to be dealt with on a plane of mutual confidence and respect, to have moderate hours of service, comfortable living quarters outside the wards, and freedom, to a large degree, from restrictive regulations. Many are married and live with their families. They are trained in their duties and in general nursing, and stimulated to secure a diploma of proficiency from the Medico-Psychological Association by a wage increase of £5 on its achievement.

A growing enthusiasm for the care of male patients by female nurses was observed. Perhaps the most extreme exhibition of this and certain other tendencies may be seen at the Sterling District Asylum at Larbert, whose activities are most inspiring. It consists of three units, close together, but essentially independent in operation—a compromise between the block and segregate plans. All patients, both men and women, are under the supervision of two matrons and five assistant matrons. In the first group for 350 (50 per cent) men and women, who are employed in the central administrative departments, care is furnished by their respective sex, because male attendants are needed to direct and assist in the work; in the second, for 250 (35 per cent) sick, feeble, untrustworthy or refractory patients, only a single male ward for 35 inmates is in charge of male nurses, who are, nevertheless, subordinate to the assistant matron. The same arrangement obtains in the third unit, or reception hospital, for

120 (15 per cent) new patients, later distributed to appropriate wards in other parts.

The quality of these matrons is worthy of attention. They are all high-class women, refined, educated, graduates of general hospital schools for nurses, or otherwise trained in their duties. They are correspondingly well compensated, and move on the plane of officers, though in touch with every patient and employee. Their elevating and leavening influence over the lower and usually weaker ranks seems to me invaluable.

The adequacy of night service here is notable. The saving in wages of women nurses on male wards is sufficient to allow a generous increment to the staff, which is half as large as the day corps. The ratio to patients is one to five in the hospital, and one to ten in other units. No inside door is ever locked, guaranteed by the little brass cover over every keyhole.

Single rooms are practically discarded, being only used by a nurse in special attendance upon some refractory patient who is temporarily withdrawn from disturbing others. I was profoundly impressed, both in Scotland and Germany, by the strong movement away from them, the contention being that patients in them are neglected, prone to form vicious habits, and to deteriorate mentally and physically. Restlessness and unclean personal habits are regarded as distinct contra-indications for their use. The average asylum does not have more than 10 per cent, and several were observed to follow the practice of Larbert.

Greater pains are taken to remove irritating causes, to avoid adverse reaction of one patient on another, to safeguard by special nurses, and to allay excitement by every means available, especially in Germany, by the warm, prolonged bath.

In these comments I have not essayed a complete or critical review of the Scotch Lunacy System, merely a delineation of salient features, not always present nor approved, such as seemed to me indicative of modern progress and tendencies, not alone in Scotland, but in Massachusetts and elsewhere. They may be epitomized under three heads:

1. The hospital idea, embodied at present in the reception hospital, which is destined to acquire full laboratory equipment for clinical aid and scientific research, and eventually to expand, in

urban localities, into the full German psychiatric clinic in connection with the university or other teaching center.

2. The colony idea, expressed at existing asylums, in farmsteadings, industrial groups, home villas and outlying farms, and in the new colonies projected after the Alt-Scherbitz plan. This is really a composite of reception hospital, closed asylum and open colony, an aggregation of small detached units, closely associated and organized much after the fashion of the conventional institution. Ultimate development will affect a wider separation of these main components, retaining all, preferably, under one superintendence, but preserving the distinctive character of each; the evolution, on the one side of the curative hospital for treatment, research and teaching, and, on the other, the true colony, a village of industries and homes, with individual interests harmonized under central direction, of an advisory nature, so far as feasible.

3. Community care, now facilitated by boarding in families and temporary treatment in unlicensed houses by a general practitioner.

Such is the official regime, presenting the forbidding aspect of legal and confirmed insanity; but a more hopeful phase is appearing in Edinburgh, as elsewhere, relating to the treatment of mental affections in the role of ordinary disease. Under the inspiration of Dr. Clouston and others this is likely to be soon attained at the Royal Infirmary, in a pavilion for the reception of mental cases under conditions similar to those of any special department, as for surgery, gynecology, etc., with a visiting staff of alienists and preservation of the voluntary relation of patients.

A CASE OF ASTASIA-ABASIA ASSOCIATED WITH EPILEPSY.

By WALTER H. BUHLIG, B. S., M. D.,

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The syndrome that was called astasia-abasia by Blocq (1), but was first described by Jaccoud, then by Charcot and Richer and by Weir Mitchell, has been found associated with various conditions. It has been a concomitant of hypochondriac and neurasthenic conditions, of depressive insanities, of paralysis agitans, and of Basedow's disease. Further, there have been cases in which the symptom complex has been seen with definite lesions of the central nervous system. Hofbauer (2) presented a case to the "Gesellschaft für Innere Medicin," Vienna, June 5, 1902, in which astasia-abasia and nystagmus had followed inhalation of fumes of chloroform. Whatever the associated morbid or functional entity may be, and whether its mechanism is that of inhibition, of fear, of amnesia, or of fixed idea, most of our present day writers believe that the essential nature of astasia-abasia is hysteroid in all its varieties. In some of the cases reported there has been an absence of the usual stigmata of the grand neurosis, and in those instances the conception must be that of a monosymptomatic hysteria.

In spite of the fact that hysteria and its various phenomena are so frequently found in subjects of epilepsy, the number of reported cases of astasia-abasia associated with this convulsive disease is a small one. Thyssen (3) published one case in which the two conditions were simultaneously present; Knapp (4), among the fifty cases of astasia-abasia collected by him, found two with epilepsy; Urriola (5) noted one in a negro, in which the diagnosis, however, was hysterio-epilepsy; Gabbi (6) has recently described a traumatic astasia-abasia in a young girl who had epileptic attacks; and, finally, Salaris (7), who reviews the whole

subject, has added two observations—to which list we wish to append one more case.

Among the 2432 cases admitted to the Ohio Hospital for Epileptics since its opening to the middle of February, 1904, this is the only one in which the symptom-complex denoted astasia-abasia has been present. The patient belonged to the service of Dr. William H. Pritchard, to whom I am indebted for the opportunity of the studying the case.

M. M., female, married, aged 34 yrs.; housewife; mother of two children, both well, neither of whom has epilepsy. Her father died of Bright's disease; her mother is living and well; one sister was an inmate of the Toledo State Hospital for about six months, five years ago; she knows nothing of her grandparents; there is no epilepsy in the family. Patient had scarlet fever, measles, and whooping cough when a child. There were no convulsions at the time of her pregnancies. Her first child was delivered instrumentally; the second parturition was normal. There were no abortions and no premature births.

She states that she had her first epileptic attack eight years ago while preparing dinner. At that time she burned herself severely, the scar of which she bears upon her chest and abdomen. She says that after the first attack she could not walk and was not out of bed for a year, for she had continuous attacks and had to be kept under chloroform and morphine a great part of the time. From the time of her first fit, her power of locomotion became gradually weaker and she was, at the end of the year, sent to Cleveland, where she underwent three operations, apparently directed to correcting uterine displacement.

In November, 1898, she obtained her first admission to the Ohio Hospital for Epileptics. She was unable to walk and was put into a cottage with its own dining-room, where she was not satisfied, and, in answer to her request to be transferred, she was told that when she was able to walk she would be sent to a different cottage. She then gradually acquired the use of her lower limbs so completely, that, in the better cottage to which she was finally sent, she worked in the dormitory and became the best bed-maker there. In this seemingly normal condition she continued until going home for a visit in 1902. While on her return journey to the hospital, the train was wrecked and she had

to be "pulled out of the window to be rescued." Immediately after this catastrophe she was again unable to walk and was taken home. Here she was frequently examined by the medical officials of the railroad, but the company never was sued. In October, 1903, she was again admitted to this hospital.

Our patient is fairly well nourished, but somewhat pale. Her appetite is good, and there is no nausea and no vomiting. She is inclined to be constipated, and occasionally has headaches, which usually occur after her grand mal attacks. There is no vertigo. For a period of ten weeks, during which time she was under direct observation, her temperature, except for a rise on one day to 100.8° F., fluctuated between 98° and 99° F. Her pulse, which is strong, regular, and full, averages about 80, and her respirations are about 20. Examination of the chest is negative except for a painful precordium. The liver is palpable, but not hard or tender. Otherwise there are no findings in the abdomen excluding tenderness in the epigastric and in the right iliac regions. No evidences of trophic or vasomotor disturbances appear on the body.

Her eyes react to light and distance. There is no nystagmus. Conjunctival reflex is present. There is no reaction to the tapping of the facial nerve, and no jaw jerk. Pharyngeal reflex is present. Myoidema is present over both shoulders. The triceps reflexes are very active on both sides, while those of the lower arm are apparently normal. No response has been obtained in trying to elicit the abdominal reflex. Tapping the patellar tendons causes a marked knee jerk, equal on both sides. The reflex of the tendo Achillis is slight. There is no ankle clonus and no Babinski reflex. Only a feeble flexion response has ever been seen on stroking the soles of the feet. The anterior tibial sign is absent. Tactile sensation is of equal degree all over the body. There is no anesthesia of the oral, pharyngeal, nasal, or conjunctival mucous membranes. Deep pressure shows no anesthesia of bones, muscles, or nerve trunks. Temperature perception is apparently normal. Pain sense is acute all over the body. The muscles and bones are generally sensitive. Pressure over the crown of the head, precordium, epigastrium, the right iliac region, all along the spine, and in the lumbar region causes visible suffering. In response to questions, the patient says "everything

hurts." It could not be decided after many attempts whether there was or was not a dilatation of the pupil during pressure upon some of these tender areas. Vision, taste, smell and hearing are normal. Her fields of vision are slightly contracted, but there is no inversion of colors. Examination of the fundi shows a pink background, a well-defined disk, and blood-vessels of normal size and contour.

Our patient is very deliberate in all her movements, hesitating almost, and her voluntary movements are all weakened. The finger-to-finger and finger-to-nose tests show incoördination, but the patient has good control of her hands and she does excellent needlework. The tongue is protruded in a straight line and shows a slight tremulous motion. The movements of the facial muscles and those of the upper extremities and trunk are in no way impaired. While lying in bed the patient moves her legs about in any desired direction, and, though active movements against resistance are feeble, they are, nevertheless, present. She dresses herself, puts on her own shoes and stockings, and lifts her legs into and out of bed, but when put upon her feet she falls to the floor. She cannot stand and cannot walk, for, when she is supported, all attempts to advance a leg result in the foot being put down upon almost any place on the floor, perhaps on the sole, its internal, or its external side. The ophthalmoscopic examination was made in the evening, and after it the patient was put to bed, trembling all over. The next morning a sick neighbor in the ward informed us that our patient had had "hysterics" all that night and that in the morning *she arose, dressed herself, made her own bed, and walked to and from the toilet-room—a distance of fifty feet each way.* This latter demonstration was witnessed by the attendants, who corroborated the patient's story. Later on that morning, at our suggestion, she got on her feet with difficulty, and by holding to the wall walked the same distance in a very imperfect manner, receiving several harmless falls during the attempt, which exhibition our informants above mentioned pronounced not like the preceding one of that morning. From that time on she relapsed into the old condition

of inability to stand and to walk in which she was at first and yet remains.¹

Our patient's memory is extremely faulty and her mental activities are sluggish. She attributes these defects to "all she has gone through with." She is very impressionable, undecided, and vacillating. Little things arouse her and cause her great concern.

If we exclude what was described above by another patient as "hysterics," the woman had, during the ten weeks she was under direct observation, one hysterical fit. This occurred during one of the physical examinations while we were searching for hysterogenic zones. Firm pressure over the precordium provoked it, but, after the attack was in progress, renewed pressure unhappily did not end it. It was made up of a series of fierce struggles with an imaginary foe, whom she tried to bite and strike, and was attended by wide motions and by an alternating sobbing period, all of which lasted some ten or fifteen minutes.

However, during this same period of scrutiny of our patient, she had seven severe attacks which were unquestionably epileptic. They were initiated by a harsh inspiratory groan and by a general tonic contraction, followed by clonic convulsions—all of which lasted about a minute—and then by a quiet sleep from which she was hard to arouse. There were never any wide movements in these seizures. The usual accompaniments of a grand mal attack—biting of the tongue, foaming at the mouth, intense lividity, stertorous breathing, loss of pupillary light reflex, involuntary evacuation of urine (never of feces), and an absolute amnesia of the occurrence, were present in each fit.

The examination of the urine showed the following: daily amount varied from 1300-1550 cc.; acid reaction; specific gravity between 1014 and 1018; urea was present in varying amounts from 0.8 per cent to 1.7 per cent; albumin and sugar were absent; there seemed to be the normal relation between alkaline and earthy phosphates; there were no pathologic sediments.

¹ Since the above was written, the patient has shown a gradual improvement, so that now, by holding to the back of a wheel chair, she can walk about fairly well.

When we come to make a diagnosis, we cannot doubt the presence of hysteria and that her astasia-abasia is of that character. The usual anesthetic signs are absent, but the hyperesthetic, motor, and mental stigmata are there. In addition the characteristics of the attack which was provoked and the history of her walking help to justify such a conclusion. On the other hand there can be no question that she has epilepsy. Attacks which we have frequently seen, each of which answers to the description given above, leave no room for doubt.

A point of general interest is implied by these last remarks. They bring up the much-hackneyed idea that the presence of hysteria does not exclude epilepsy, and vice versa. Our patient was admitted with the diagnosis, by an outside physician, of hysterio-epilepsy, and the very first attack of any kind that was witnessed by the writer was the one which he has denoted hysterical. At that time the stigmata had been found, and a diagnosis of hysteria had been made; the attack following such a diagnosis made that conclusion all the more positive and easily permitted the error of assuming that the patient had only hysteria, an inference absolutely contradicted by subsequent careful observations. This mistake of ascribing to the grand neurosis all the symptoms in a patient admittedly hysterical has been made so commonly even by careful observers that it behooves one to be ever on his guard against it.

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THE PRINCIPLES OF COLONY BUILDING FOR THE DEFECTIVE CLASSES.

By WILLIAM P. SPRATLING, M. D.,

Medical Superintendent of the Craig Colony for Epileptics; Secretary of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics, Sonyea, N. Y.

The Colony plans seem destined to enjoy in the future very great favor in the care and treatment of the defective-dependent classes. Suitably modified it can be made to serve equally as well, the epileptic, the insane, the feeble-minded, and a large proportion of the reformatory classes.

For all these the main features of the system are the same, and it is my purpose to make a brief exposition of these only in this paper.

One fundamental error in founding most institutions is in making them too small. If we propose building a colony for one thousand insane or epileptics, we should first secure one thousand acres of the best land that can be had. An acre to each individual the Colony proposes to care for is none too much.

The plan I am about to describe can best be carried out on a large tract, though by consolidating some of the needful features named in the central group, it can be adapted to smaller plots as well.

The scheme is one of perfect simplicity, at least such has been my experience with it at the Craig Colony for Epileptics at Sonyea where I have had opportunity for observing, during a period of eight years, its practical application in the reception, care, treatment, employment and education of some 1500 epileptics of all ages, grades, types, and conditions.

The plan is this:

On the plot of land on which it is proposed to build the colony, draw four imaginary lines, letting the first enclose enough territory on which to locate these features—

The Administrative Building.

The Hospital.

The Schools.

The Industrial Buildings and Work Shops.

The Store and Supply Houses, including the Bakery.

The Library.

The Laboratory.

The Laundry.

Homes for Employees.

To these, in many instances, the configuration of the ground and the location of the railways over which supplies are received, permitting, may be added a central power and heating plant. All these things demand continuous attention, and they need to be within a small radius that makes them easy of supervision.

Of all the essential features of colony buildings, I know of none that gives greater discomfort and annoyance, besides inviting actual disaster if not provided, than that of adequate classification. This can only be secured when houses are built expressly for it.

Reference again to the diagram shows that it is desirable to locate the best class of patients nearest the administrative center. It is for this class that most can be done. They require constant attention either in the way of treatment, education, occupation, or all of these.

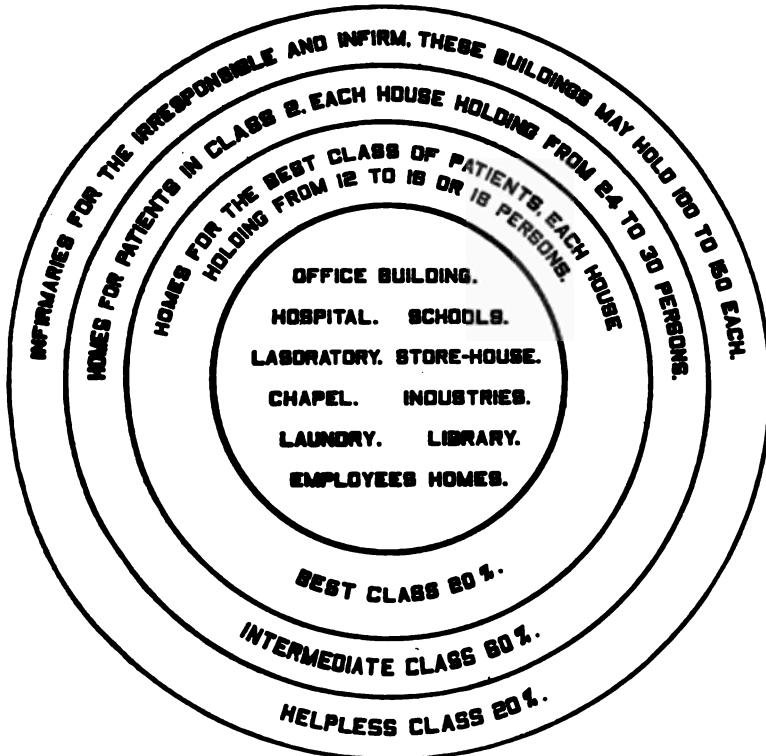
At Sonyea this class constitutes 20% of the total epileptic population. They occupy the smallest houses, 16 to 18 living in each house. They do all the work of the household save laundering and bread making, both of which are carried on in central plants for the entire colony. One-half of the patients in these small houses have single rooms, others live two in a room, while in rare instances a room is found that holds three beds.

Beyond this second circle, we find the homes of the great middle class, which, at Sonyea, comprises 60% of all in the Colony. Here the houses hold 28 to 30 persons each. These also have some single rooms, but most of the rooms are for 2 to 5 each, no room holding more than 5.

In the outermost circle, are large buildings for the perpetually infirm, the bedridden and the insane. Classification for these is of no particular value. The problem here is that of the best care at the least cost. These buildings at Sonyea will hold, when com-

pleted, 125 to 150 each, and they are located three-quarters to a mile from the central group.

It will thus be seen that the size and location of the house depends upon the type of colonists who occupy it. The better the patient, the nearer he lives to the administrative center; while the less desirable he is, the further he is removed from such center.



The plan (it is the one in use at Sonyea so far as it has been possible to adopt it) while by no means elaborate, is practical and effectual.

It is not meant, then, in founding a Colony that concentric rings of buildings should be located about the center on all sides. The diagram is presented merely to show the relationship between the patients of one group and those of another, and the relationship of them all to a common center. The center being determined,

all development may be in one general direction and may include less than one-half or one-third of the total circumference.

To do this would not interfere in the least with the principles of the plan outlined.

The percentages of the different classes given in the illustration apply to epileptics at Sonyea only. They would necessarily vary with each class cared for.

STATUS EPILEPTICUS: A CLINICAL AND PATHOLOGICAL STUDY IN EPILEPSY.

BY L. PIERCE CLARK, M. D., NEW YORK, AND THOMAS P. PROUT, M. D., NEW YORK.

(Continued from Vol. LX, No. 4, page 675.)

MICROSCOPICAL PATHOLOGY.

Assuming that epilepsy is a cortical disease, our study will be facilitated by the following questions:

(1) Exactly what anatomical elements of the cortex are involved in epilepsy as portrayed by the status condition?

(2) In the broader sense are the cells especially concerned in the epileptic spasms sensory or motor in character?

(3) Are we to assume as a result of the frequent, long continued epileptic fits, such as are seen in status or serial spasms, the destruction of certain nerve cells or merely a temporary irritation of them?

(4) Of what relative significance are the changes in the chromatic substance of the nerve cell described by so many authors?

(5) In what light are we to regard the neuroglia hyperplasia occurring in epilepsy?

Any lesion of the brain tissue accompanying epilepsy we may expect to find most pronounced in that most decided and most acute manifestation of epilepsy, status epilepticus. This study embraces a total of seven cases of status epilepticus which died during the status period. Besides these we have examined the brains of twelve other cases, the findings in which may be put forward as confirmatory evidence. We may therefore regard what follows as bearing not only upon the pathological conditions in status in particular, but as being also of quite equal import in its general bearing upon the pathology of epilepsy.

Methods.—The period of time elapsing between death and the placing of the brain material in the various solutions in the seven

cases of status was in three cases one hour and in the remaining four, two, three, five and six hours respectively. In the twelve other cases the time varied from two to eleven hours. In all except two cases the autopsies were done within seven hours. The brain tissue was fixed in absolute alcohol and formalin, the former being used for the study of the nerve cell and the latter for the study of the neuroglia.

In order to stain well all the cells of the cortex, it is essential that the material be perfectly fresh. If more than seven hours elapse between death and the placing of the material in the fixing solution, many of the cells are apt to show signs of decay.

The Nissl method was used for the study of the nerve cells and the Robertson and Weigert methods for the study of the neuroglia. The sections for the Nissl method were made without imbedding the tissue in celloidin. Blocks of the hardened tissue were attached to pieces of wood by means of stiff gelatine, and when they had become thoroughly attached by immersing in alcohol for a time, the sections were made. All the sections were 10 mm. or less in thickness.

In staining, the best results were obtained by a process of over-staining, subsequent decolorization being relied upon to bring out the cortical elements. This was accomplished in the following manner: The section was attached to the slide by allowing the alcohol to evaporate; it was then covered with the methylene blue solution and allowed to stand for about an hour; the slide containing the section and stain was then placed over a boiling water-bath so that the steam came into contact with the under surface of the slide and in this manner the latter was heated for two or three minutes. The slide was then removed, allowed to cool, the stain poured off and the moisture wiped from the under surface. It was then placed in a bath of anilin oil, a 10% solution in absolute alcohol. After this treatment the section is so much overstained that the decolorization process is slow and usually takes from three to fifteen minutes. The section is then thoroughly washed in xylol for five or ten minutes. The permanency of the stain is materially aided if the anilin oil is thoroughly washed from the section. The section is stained quite evenly and all the cortical elements are well defined. This method has the further advantage of uniformity.

Microscopical Appearances.—The general microscopical appearances presented by the seven cases of status were practically the same. In the description that follows, no case will be specified unless it differs from the others in some particular. In the twelve other cases of epilepsy examined the conditions observed differ from those found in status only in degree.

The most striking condition in all the status cases was the marked chromatolysis. This involved all types of the cortical cell, but was most marked in the large pyramidal cells of the third layer. Groups of these cells presented no chromatic granules at all, or but a few traces of chromatic substance in one portion of the cell. (Fig. 10). In many other instances, the body of the cell presented a diffusely stained appearance, no differentiation of the granular mass having taken place. In still others the chromatic substance of the cell appeared finely granular and was diffusely scattered throughout the cell body. The chromatic changes in the large ganglion cells were striking and characteristic. In many instances the body of the cell appeared greatly shrunk; in not a few the cell presented the appearance of a much distorted mass of protoplasm and the spindle-shaped chromatic bodies were reduced to mere thread-like filaments. In other words, the chromatic bodies had practically disappeared, leaving the cell framework (the ground substance in which the granules are contained) practically bare. Figure 6 shows this condition. The small pyramids of the second layer often showed a complete absence of chromatic substance. For this reason some care was necessary in staining the cells in order to bring out the different anatomical structures. The same was true of the smaller cells of the fourth layer. In very many instances nothing in the way of chromatic substance was left in these cells except a few fine granules.

We can not determine that the chromatolysis is uniformly one of any of the frequently described forms. In fact some of the cells presented what can only be characterized as a decided general chromatolysis. I refer to certain groups of cells of the third layer such as shown in Figs. 9 and 10. In some of these cells there remained no vestige of the chromatic substance; the cell framework was absolutely denuded, leaving nothing but a dimly outlined protoplasmic mass greatly vacuolated (Fig. 9, b). In still other cells, especially those of the smaller type, the only vestige of

chromatic substance remaining was found in the so-called "axonal hillock." In a few of the large pyramids the chromatolysis seemed to be of a distinctly central character. While the evidence seems to point to a central chromatolysis which in the more extreme examples presents a completely denuded cell framework, still we are not prepared to say that this is the form of chromatolysis always presented in epileptics who have died during the exhaustion of status. The type of chromatolysis seems to vary to a considerable extent in the different types of cells.

Vacuolation of the protoplasm of the body of the cell is presented as a direct sequence of the chromatolysis, and is most marked in those cells presenting an extreme degree of chromatolysis. As is well known, the chromatic granules are contained in a lightly staining protoplasmic reticulum. When, therefore, these granules for any cause disappear from the body of the cell, they do not leave behind a homogeneous protoplasmic mass, but a mass reticulated and vacuolated. In groups of cells of the third layer the vacuolation of the protoplasm was often extreme and especially marked in all the status cases (Fig. 9). The small pyramids of the second layer often presented many small, round vacuoles in the rim of the protoplasm surrounding the large nucleus characteristic of these cells (Fig. 2). Extreme degrees of vacuolation presented themselves in the axonal extremities of many.

Some points of chief interest centre in the nucleus of the cells throughout the cortex, but more especially in the nuclei of the small pyramidal cells of the second layer. The nucleus of these cells was in most instances swollen and granular and often filled out the cell completely (Fig. 4). It was rarely possible to distinguish the nuclear membrane, and when a trace of it was visible, it showed but an erratic outline (Fig. 2). In the cells of the third layer and the large ganglion cells the nucleus often appeared extremely distorted as shown in Fig. 6. In this cell, portions of the nuclear membrane are still visible, but are extremely distorted and irregular, the whole nuclear mass being small for a cell of this type. Many cells in the third layer failed to show any nuclear membrane and the nucleus was only definable as a more lightly stained portion of the cell, centrally located. In many instances the limitations of the nucleus were hard to define, it having almost

disappeared as an anatomical structure in the cell. This is well shown in Figs. 7, 9 and 10. Fig. 9 represents a group of large pyramidal cells in which nearly all trace of the nuclei has disappeared. The drawing represents the relative position of the cells of the group as presented in the cortex. The same condition, not quite so far advanced, is shown in Fig. 10. Another striking condition of the nucleus, where definable, was its granular appearance. This was especially marked in the cells of the second layer and is shown in Figs. 1, 2, 3, 4 and 5. No karyoplasmic network was definable in the vast majority of these cells, but a lightly stained granular mass occupied the nucleus in its stead, as is shown in the figures. There was very little deep staining of the nucleus. In fact, unless one observed the nucleus very carefully as regards its staining qualities, very many would have suggested a comparatively normal state. The normal karyoplasmic network, however, was in no instance definable, it having apparently deteriorated into a finely or coarsely granular substance. As a direct sequence of this condition the nucleolus was with great frequency found displaced to one side of the nucleus as shown in Fig. 2. This condition was extremely common in the cells of the second layer, in which type of cells also the nucleolus was found in all stages of abstraction from the nucleus as shown in Figs. 1, 3, 4 and 5. Very many free nucleoli were found scattered throughout the cortex and their relationship to any particular cell was often impossible to determine. Such nucleoli were often surrounded by a fleecy mass of nuclear substance as shown in Figs. 5 and 9. This condition (nucleolar abstraction) was so frequent, especially in the cases of status, that it was very striking. We have found more than sixty abstracted nucleoli in a single section from the motor cortex, the surface area of which was not more than one square centimeter. Upon investigation it was found that this was an artefact produced by the action of the knife in making the section. It was found that the nucleoli were withdrawn from the cell by traction in a given line, and that this line followed the direction of the knife in making the section in every instance. The reason for the unusual frequency of this artefact will appear when we reflect upon what has already been said. The disappearance of the nuclear membrane and the destruction of the karyoplasmic network have been pointed out. In other words,

the karyoplasmic network which normally holds the nucleolus in its place, has been destroyed and the nucleolus remains a body perfectly free within the nucleus and is readily displaced by any force coming into contact with it; the knife, consequently, drags many of these loose nucleoli from the cell in making the section. We have recently examined some sections of normal human brain with a view to determining the relative frequency of this artefact under normal conditions. The case from which the normal brain material was taken was one of accidental death. The material was placed in absolute alcohol within two and one-half hours after death and was mounted, cut and stained with exactly the same instrument, and as nearly as possible in the same manner as the epileptic material. The sections were the same thickness. Thirty-two sections were examined, a mechanical stage was used and every portion of each section was seen with an immersion lens. This work occupied several days and at the end of that time we had found fourteen examples of nucleolar abstraction in the thirty-two slides of normal brain; or, to put it concisely, this artefact was one hundred and thirty-seven times more frequent in the sections from these cases of status, than it was in normal brain material.¹

¹ We have recently examined two additional cases of status (L. H. and N. H. J.). In the case of L. H. the phenomenon of nucleolar abstraction was very pronounced. In a single section from the motor cortex, covering not more than one and one-half square centimeters of surface, we found one hundred and twenty-one examples of nucleolar abstraction. In this case the autopsy was done about one hour after death and the tissues were rapidly fixed and hardened in absolute alcohol. In the above count of the abstracted nucleoli none were included except they were entirely without the cell. The slide was selected at random from a large number. Abstracted nucleoli were found throughout the motor cortex but no effort was made to count them except in the above mentioned slide. The vast majority of the nuclei of the nerve cells throughout the cortex were very granular and some were deeply stained. In some instances the intranuclear network appeared greatly swollen. The chromatolysis was very pronounced, the granules having disappeared from many of the cells, nothing remaining except a more or less vacuolated mass of protoplasm.

In the case of N. H. J. no attempt was made to count all the examples of nucleolar abstraction in a given section, but this artefact was quite as frequent as in the former case. For example, in a single section from the motor cortex, forty-nine examples of nucleolar abstraction were found in

Two questions immediately suggest themselves concerning the distribution of the lesion. Are any particular areas of the cortex implicated? In epilepsy of the Jacksonian type are the lesions focal in character? The conditions just described are found in the motor cortex and are quite evenly distributed through it. In the case of F. D. in which we had reason to suspect a lesion in the right face area, we were unable to demonstrate that these phenomena were any more decided in this portion of the brain cortex than in some cortical areas of the opposite side. We can not as yet give an opinion regarding the relative frequency of these lesions in the motor cortex as compared with other portions of the brain.

We have already called attention to the extreme degree of chromatolysis and to some evidence of destruction of the large pyramidal cells of the third cortical layer as illustrated in Figs. 9 and 10. It remains to speak of further evidence of the same thing in the second cortical layer. One of the most remarkable features of the sections from all portions of the motor region in all the status cases, (especially well marked in the case of C. R.) was a broadening of the outer cortical layer. This broadening of the outer cortical layer did not appear as an excrescence interrupting the even continuity of the cortical arc, but seemed to be entirely at the expense of the second cortical layer. Considerable areas presented themselves in which the cells of the second layer were comparatively few, the outer layer seeming to encroach upon the layer below.

Another very striking evidence of a destructive lesion in progress among the cortical cells, was the invasion of the cortex by leucocytes. This condition was pronounced in all the cases of

passing over the entire depth of the cortex fourteen times with an immersion lens. Sections from various portions of the brain were examined and abstracted nucleoli were found with greater frequency in portions of the motor cortex than elsewhere. The predominance of this condition in the motor cortex may be accounted for by the extreme activity to which these cells have been subjected for a considerable period and the exhaustion consequent upon such activity. The fact, however, that this condition was not confined to any one portion of the brain, strongly suggests the activity of some substance which, from the nature of things, is operative upon the whole brain structure, as the ultimate underlying cause of these cell changes.

status, and was well marked in the other cases of epilepsy. It was especially marked among the cells of the second and third layers. Among groups of degenerated nerve cells the leucocytes were found to be clinging to the remains of the protoplasmic mass as shown in Figs. 9 and 10. In Fig. 9 it will be noticed that the cells in that group are so much degenerated that it is difficult to make out the different anatomical elements of the individual cell. Two present leucocytes (a) in immediate proximity, and in both instances the leucocyte has greatly distorted the remnants of the nerve cell. In Fig. 10 the cells appear less degenerated and four leucocytes are seen in the neighborhood. One of the nerve cells presented a large mononuclear leucocyte superimposed. Pictures like these were especially frequent in the status cases. The leucocytes present were almost without exception the large and small mononuclear cells—cells with marked phagocytic properties.

The smaller vessels of the cortex presented no lesion. In two of the cases of status there were numerous punctate hemorrhages in the cortex. These were small and while they had destroyed a certain amount of nerve tissue, nevertheless the permanent effect, had recovery taken place, would probably have been so slight as to have escaped notice.

The neuroglia was studied in seven of the cases, two being of status. The conditions found varied a good deal. Here again the broadening of the outer cortical layer was a striking feature of the section, but the reason for this appeared in the neuroglia overgrowth, which in some of the cases was very decided. At some portions of the cortical arc the neuroglia presented itself as a dense fibrillary mass as shown in Fig. 8. Here the neuroglia overgrowth was so decided as to present a positive excrescence. This was unusual. Many of the neuroglia fibres extended deeply into the cortex, more especially where the cells of the second layer appeared to be few in number.

In the subcortical areas also, the neuroglia fibres appeared to be greatly increased and encroached somewhat upon the cells of the lower cortical layer. The neuroglia nuclei varied much in size, shape and staining qualities. Many were extremely irregular, as shown in Fig. 8, and were arranged in groups of three and four. A few were deeply stained. Not a few others were unusually

large. The great variability of the nuclei in size, shape and staining qualities, suggests a state of active proliferation.

SUMMARY.

We may summarize the pathological changes found in status epilepticus and in epilepsy in general, as follows:

The first discoverable lesion appears in the nucleus, and this is the organ of the cell first and most seriously involved. The nuclear membrane and the karyoplasmic network disappear and the karyoplasm becomes finely granular, the direct result of the destruction of the karyoplasmic network. In consequence, the anchorage of the nucleolus is destroyed, and it becomes a free body within the nucleus. In the process of making the section many of these free nucleoli are abstracted from the nuclei to which they belong and appear in the section entirely outside of the cell—nucleolar abstraction (Figs. 1, 3, 4 and 5; Photomicrographs 1 and 2). Many nucleoli are greatly displaced within the nucleus (Fig. 2).

The following secondary changes take place in the order named:

The granules of the chromatic substance disappear from the cell body, leaving behind a dimly outlined cell framework. All trace of the nucleus finally disappears and nothing remains of the nerve cell but a shapeless mass of vacuolated protoplasm. Many neurons disappear from the cortex, especially from the second and third layers (Figs. 7, 9 and 10).

The cortex becomes invaded by leucocytes, the chief mission of which is probably the removal of the debris of destroyed nerve cells and poisonous products. The variety of leucocyte found in the vast majority of instances is a cell with marked phagocytic properties, the large mononuclear (Figs. 9 and 10).

The neuroglia proliferates to take the place of the destroyed nerve cells. This proliferation is most marked in the outer cortical layer and is largely proportional to the duration and severity of the epilepsy. The destructive process especially involves nerve cells in the second layer, and the third layer in lesser degree.

The significance of these changes is rather important. Speaking broadly, the epileptic fit is a destructive process. We can hardly have observed the gradually increasing dementia of the epileptic

without having thus concluded, regardless of the pathological findings; however, the pathological changes found in the cerebral cortex, together with the life history of the epileptic, confirm this fact definitely. The especial involvement of the nucleus of certain of the cells of the cortex is a fact of great importance. Biological facts teach us that "the formative power of the cell centres in the nucleus, and it is therefore to be regarded as the especial organ of inheritance;" that "it plays an essential rôle in chemical synthesis;" that "digestion and absorption of food, growth and secretion cease with its removal from the cytoplasm;" and that "fragments of protoplasm deprived of the nucleus die." (Wilson, Verworn). When, therefore, morbid processes especially attack the nucleus, the portion of the cell essential to its life becomes jeopardized. From the foregoing, we are justified in assuming, not only that the essential poison in epilepsy is a nuclear poison that shows a special predilection for certain delicately constituted cells of the cerebral cortex, but that the chromatolysis which appears as a widespread condition, particularly in all cases of status, is a nutritional change, brought about chiefly by the jeopardization of the nucleus, which is known to preside over the nutritional functions within the cell.¹ This assumes that "the chromatic bodies constitute surplus nutritive

¹ Dr. J. George Adami, in a recent article on "The Causation of Cancerous Growths" (*British Medical Journal*, March 16, 1901) voices the modern view regarding the role of the nucleus in the cell, in the following words: "We are recognizing more and more that the nucleus plays a controlling part not merely in cell division but also in the functions of the cell. With activity the nuclear chromatin becomes used up and discharged into the body of the cell, there to combine with other substances to build up prezymogens and other bodies which are eventually discharged as the specific secretion of the cell. This being the case, we can readily understand that the higher specific functions of the cell cannot be carried on by a nucleus whose nuclear material is being utilized to its fullest in mitosis. The process of cell division and the performance of the higher functions of the cell are incompatible and the cell engaged in the active performance of its special function cannot undergo division." In status, the higher functions of the cell have been in abeyance for a considerable period. Since the nucleus has to do with the important processes of the digestion and absorption of food product, growth and secretion, it follows that the suspension of these functions for any considerable period is a serious matter, and cannot but result disastrously.

products of the nerve cell or represent potential energy in the nerve cell." Ewing's review of the literature bearing upon this point, and his own personal study of this subject would seem to warrant the conclusion quoted.

We have previously mentioned the probable phagocytic mission of the leucocytes that are found to have invaded the cortex. This is a fact of great significance. Phagocytosis occurs as one of the sequences of the action of toxic elements upon certain cells. In our cases of epilepsy we have to look upon the leucocytes found in the cortex as phagocytes.

The question as to whether or not the neuroglia cells ever become phagocytic is suggested in the recent work of Mallory. He has shown that many cells of endothelial type and origin become markedly phagocytic in response to the action of certain toxic substances. Various authors, many of whom were noted at the outset of this study, have described the neuroglia proliferation in epilepsy. We have found it in greater or lesser degree in all the cases examined, and believe that, with improved methods and technique, it will be demonstrated in every case of epilepsy of any considerable duration. Inasmuch as cells proliferate in response to the action of toxic or irritating substances, it seems right to look upon the neuroglia proliferation in epilepsy as evidence of the underlying toxic character of the disease.

There is a secondary reason for the neuroglia proliferation in epilepsy. The nerve cell once destroyed is never replaced. The vacancy caused by its disappearance must be taken by cells capable of proliferation. The great increase in the neuroglia in epilepsy occurs therefore in response to (a) the action of toxic elements upon the neuroglia cell, and (b) as a direct sequence of nerve cell destruction.

CONCLUSIONS.—In view of all the facts, how may we answer the points suggested at the outset of this section?

(1) If the especial involvement of any particular type of cell is indicative of the essentially sensory or motor character of epilepsy, it would seem that Prus was correct in concluding that epilepsy is essentially a sensory phenomenon, as the cells of the second layer and the third layer, in lesser degree, are especially involved.

(2) The essential lesion of epilepsy pertains to the nucleus of certain of the cortical cells and is of such nature as to seriously jeopardize the cell for considerable periods and ultimately cause its destruction.

(3) The chromatolysis in epilepsy is a nutritional change brought about by the nuclear toxemia, since the nucleus presides over the process of elimination, absorption and digestion in the cell unit.

(4) The role of the leucocyte in the cortex after severe epileptic explosions is most probably that of a phagocyte.

(5) The neuroglia overgrowth in epilepsy is one of its more remote sequences and probably occurs in response to toxic irritation.

CLINICAL INTERPRETATIONS OF THE PATHOLOGICAL FINDINGS.

It is evident from the foregoing that status epilepticus is the severest type of epilepsy. We would therefore expect the underlying pathology in both to be the same; mild in epilepsy proper, severe and marked in status. These expectations are fully substantiated in this work. We are warranted, therefore, in drawing some general clinico-pathological conclusions from the histopathological data.

Epilepsy is primarily a sensory phenomenon with a motor expression. These studies upon the human cortex in epilepsy are quite in accord with experimental data so carefully undertaken by Prus, Hering, Bischoff and others. Epilepsy then in its totality may be designated a highly organized sensori-motor reflex of the cerebral cortex. The therapeutics of epilepsy also contributes to the same conclusion. The bromides, which are the most efficient agents of sedation in epilepsy, act primarily upon the sensory type of cells of the cortex, the afferent side of this complex reflex arc. They apparently aid in cerebral inhibition by forming a more stable chemical compound in those cortical cells than can be maintained by the highly organized nitrogenous elements in unstable degenerative equilibration and thus reduce the number and intensity of the afferent impulses to the motor cells whose activity they inhibit both in health and disease. The symptoms in acute and chronic bromide poisoning are quite identical to the immediate and remote effects of epilepsy itself. The bromides are consequently

often burdened unjustly as causing physical and mental symptoms for which the epilepsy alone is responsible. Inasmuch as the bromides are but artificial means in producing cerebral equilibration, other more natural aids must be employed to maintain their temporary effect in bringing about a cure of the disease, hence the importance of accessory treatment being considered in the broadest light possible. The sensory character of epilepsy is also shown in that the bromides are of but little avail in cerebral affections largely motor in type, such as myoclonus, chorea, paralysis agitans, etc. The absence of a constant lesion or abnormality in the motor cells aside from chromatolysis and exhaustive shrinkage, even after a life long epileptic career ending in fatal status, should have influenced us long ago to study other cortical cells than those so purely motor in function, for the histo-pathological lesion in the epileptic brain. A point of therapeutic importance is that the lesion is a diffuse one and affects the entire cortex. It is not focalized to the motor region. It probably generalizes itself over the entire cortex as soon as once thoroughly established. The lesion may and probably does have a point of area of maximum intensity in certain cortical areas, although microscopic proof of this clinical surmise is not yet at hand. The probable coincidence of sensory (aura) and motor symptoms in some one part of the Rolandic area largely explains the happy results of early surgical treatment in the absence of an hereditary predisposition. The prime importance in studying sensory rather than motor symptoms in the epileptic discharges is indicated by the fact that an order of muscular march in the fit demonstrates solely the successive order of spread or discharge in the motor areas, which remains almost invariably the same for years, yet the disease steadily undergoes important modifications which are shown in a continued destruction of cortical elements of the sensory type.

The aura (sensory), however, and in its absence the degree and character of mental disturbance and deterioration, gives a fair index in the course and prognosis of the disease. Practical methods of measuring these by physio-psychological means would be of the highest value.

The ultimate disappearance of the involved cortical cells is the most serious clinical phase of its pathology. It explains many of the permanent symptoms of the disease, especially the slowness,

awkwardness and incoordination of bodily movements. In many instances this disorder of motility amounts to a paralysis in effect, particularly after recovery from severe status epilepticus. The local and general exhaustion after local or general fits are true exhaustion paralyses in type, but the chronic slowness (and exaggerated reflexes), awkwardness and incoordination seen in long standing cases are really of the sensory type. In such the damage or loss of sensory elements not only *permits* cortical motor cell overaction as seen in the fit, but it also leaves these motor cell elements *uninformed* of the normal nature and character of movements required. Analogous explanation holds good for tabes, the ataxia of so-called paralytic type (Jackson).

The mental changes (dementia in type) are commensurate with the simpler sensori-motor changes attending the cortical destruction, and are to be explained in the same manner.

The missing links of our knowledge of epilepsy are the pathogenic agents and the organic anomaly of the cortex which constitutes the predisposition; these two etiological factors still hold the mystery of frequent relapses. We believe, however, this study has narrowed the gap between the terminal gliosis and the toxic and autotoxic agents of the disease pathogenesis which in turn largely concerns cell changes and those especially of the nucleus. We have not conducted this study without making some surmises concerning the pathogenic agents of epilepsy. They appear to us to be comprised in a vast number of toxic and autotoxic agents. However, the hereditary instability of the cerebral cortex is the real basis of the causation of epilepsy. This consists most probably in physio-chemical anomalies of certain cortical cells which permit of a faulty physiological equilibration of the nucleus and its nutritional control over extrinsic and intrinsic cell activity. Each repetition of the seizure phenomenon of epilepsy increases and accentuates the abnormal behavior of cell function, and in time perverts the intrinsic nutritional integrity of the cell itself, and its functions as a biologic unit of the cerebral cortex soon ceases. This in turn tends to perpetuate the instability of the brain as a whole, and stirs in train a series of degenerative changes whose logical termination is fatal status epilepticus.

Investigation must now look to physiological chemistry to determine what agents will produce the histo-pathological cell

changes of this study of status. It must be undertaken along all allied lines of research as that of insanity; both problems deal with the structure and function of cytological elements, of whose life activities in health and disease our real knowledge is exceedingly meagre.

Finally, we have in this pathological study adequate evidence for the present successful empirical treatment of the epilepsy in which the individual is given first attention. It consists largely in overcoming hereditary tendencies, excluding toxic and autotoxic agents and in giving the patient a thoroughly detailed plan of diet, exercise, recreation, baths and sedatives. The importance of the earliest treatment cannot be too thoroughly insisted upon.

THE TREATMENT OF STATUS EPILEPTICUS.

PROPHYLAXIS.

The prophylactic treatment of the status is of great importance. If serial attacks are presented in the history, sedatives must be employed to check the periodicity of attacks. This can be accomplished by giving bromides at the threatened periods in sufficient quantities to at least partly suppress the convulsions. In this way one may spread out or prolong the period of discharge, and thus the exhaustion is lessened for the particular period.

In case there is a gradually increasing paroxysmal frequency, bromides in high dosage must be employed; any sudden decrease or withdrawal of bromides may precipitate status; a large per cent of status cases in general practice are induced by such indiscretions. The long account of suppressed paroxysms is then paid for by a status condition which frequently terminates the patient's life. Cases in which there is a sudden and prolonged suppression of attacks need careful watching, as they constitute a certain per cent of the status statistics. For these cases the emergency prescription for an incipient status should be in readiness. The formula for the emergency prescription has been used with unusually good results. It was first used by us in 1896, and in a slightly modified form it has been constantly employed in all cases of threatened status. The formula and directions for using the same are:

℞ Tr. Opii Deod.....M. v.
 Potass. Bromid.....Gr. xxv.
 Chlor. HydtGr. xx.
 Liq. Morph. Sulph. (U. S.)3 i

Sig. One dose; repeat in two hours if necessary.

An explanation of the efficacy of this prescription might be made on the following principle: The chloral and morphine are the first to act in their respective order, the chloral as a sedative upon the vascular system and especially upon the blood supply to the brain; the morphine as a sedative on the nerve cells. Following their immediate combined action we obtain the slower and more permanent sedative effects of the bromide and opium upon the cerebral centers.

One experienced in the care of epileptics becomes watchful for the possible occurrence of status, and consequently employs methods in the general treatment of the disease which will lessen the impetuosity of a threatened status period. In chronic epileptics in whom serial or pseudo-status is liable to be of frequent occurrence, the bromides need to be given between periods with the greatest caution, in order that the full sedation of the salts may be used effectually at the status crisis; in other words, we must hold a certain reserve for the paroxysmal climax. The employment of all things favorable to the general amelioration of the epileptic state should be the general rule in prophylactic treatment of status.

The surgical treatment of status is relatively unimportant; status of idiopathic grand mal cannot be successfully treated by any known surgical procedure, either from clinical or pathological considerations, and therefore operative interference is not justifiable in idiopathics. Trephining on the basis of the late revival of the old theory,—whose ghost has just been laid again,—that the status is the result of an increase of intracranial pressure has not alleviated the convulsions of the status condition to any appreciable extent. However, trephining for the status epilepticus, caused by a recent trauma, is imperative and its early adoption is attended by the most brilliant results, but surgical treatment of this form of epilepsy should never be postponed until the status develops. Operation should be undertaken as soon as the influence of the trauma can be determined. The

status of old organic lesions, such as the old infantile cerebral palsies, is hardly operable but should be considered in the class of idiopathic epilepsy as far as treatment is concerned.

It may appear from the nihilistic standpoint of this thesis that status being but a climax of epilepsy proper is therefore not preventable until we are able to modify the underlying tissue changes in the cerebral cortex. However, many status periods are aborted by proper treatment of the epilepsy as well as the status itself. Not only may the life of the patient be saved, but the patient may recover from the epilepsy. The present mortality from status can be further decreased to a marked extent by resorting to prompt treatment in the convulsive stage. If the seizures cannot be entirely controlled in all cases, it is generally possible to lessen the paroxysmal frequency and thus conserve the organism from acute exhaustion, the most fatal sequence of status. Indeed the condition of acute exhaustion stands in the same sequential relation to death by status as status does to epilepsy proper.

After the first five or six paroxysms, the emergency prescription heretofore mentioned should be given. In the fifteen or twenty minutes necessary for the remedy to take effect, chloroform should be employed to immediately lessen the severity and number of paroxysms. This anesthetic must be administered to the point of complete surgical anesthesia to be effective in controlling the convulsive stage. *It must always be borne in mind that that which is indicated for the convulsive period is contraindicated for the subsequent stuporous stage, therefore antispasmodics need to be given with due caution.*

Delasiauve has recommended general and local blood letting, drastic cathartics, ice to the head, and quinine by rectum. Bourneville and some other French writers claim to still hold this plan beneficial. Acting upon the theory that venesection lessens the toxicity of the abnormal accumulation of waste products (toxins) in the blood, the plan of blood letting is a good one. Venesection in status finds its greatest value when employed in plethoric epileptics. Status only too frequently occurs in the feeble instead of the robust, only one-third of our cases were in normal bodily vigor at their status periods. A better practice is to venesect and inject saline solution. This method, as it doubly reduces the toxicity of the blood, deserves first place after the emergency

treatment of status has been tried and found inefficient. As for venesection for the supposed increased intracranial and arterial pressure, the condition has no basis in fact; on the contrary, Fere has shown that intracranial and arterial pressure is markedly diminished in status, and Nornatsky and Arndt have recently conclusively demonstrated by their elaborate experiments upon single, serial and status convulsions that the increase of intracranial pressure is only a result and not a cause of epilepsy.

If drastic cathartics are given early they may be of use; in the later stages they are brought into action with great difficulty. The application of ice to the head in the convulsive stage is to be discouraged, especially so as the coma becomes continuous. It has its advocacy in the early belief that status was a meningitic affection. Ice to the head may be employed in convalescence, as it appears to lessen the post-status delirium and often contributes to the comfort of the patient by lessening the headaches and the many morbid cephalalgic sensations. Ice applications to the spine have been highly recommended by Gowers and Brown. Bourneville recommends ammonia inhalations for the convulsions; large doses of bromides (12 to 16 gm. daily) and camphor. The efficacy of this treatment rests entirely upon the bromide. The administration of camphor and ammonia inhalations is generally attended by negative results. The subcutaneous use of bromides in status is to be highly commended. After extensive trials ranging from a 10% solution to that of full saturation of the salt we have determined that subcutaneous injection of bromides should not be given in a stronger solution than 10%; even then in about one-third of all cases abscesses will form; care must therefore be exercised to give the salt under strict antisepsis and in parts where abscesses can be most easily treated in convalescence. The injections are extremely painful and should only be given when coma is profound and only when the convulsive stage is well advanced. Gentle friction and moist heat at points of salt injection favor absorption and discourage abscess formation and necrosis. This plan of giving bromides is especially recommended by Wildermuth and has been favorably commented upon by many others. If hypodermic medication of bromide is to be of service 120 grains should modify the status symptoms in the course of two or three hours. If this amount does not appreciably

affect the convulsions, no more salt should be given by this method; sodium bromide is the best salt to administer in this way.

Asafoetida, belladonna, bromethyl and atropine have been used by Bourneville without gaining any good results. Belladonna, although of signal value in epilepsy proper, has too feeble antispasmodic properties to be of any great service in status. Bromethyl is sometimes effective, especially in incipient status. Atropine should only be used in respiratory failure in the stuporous stage. Crichton-Browne introduced amyl-nitrite and based its favorable action in the status of epilepsy upon the fact that many of the status symptoms were due to the asphyxia of the brain and that the use of this drug should relax the arterioles and favor the circulatory return. However true the theory may be, we have never seen any benefit from its administration in the severe grand mal status, but have observed slight benefits from its use in serial psychic epilepsy, its action here being due to an alteration in the cerebral circulation from increased cardiac activity and dilation of arterioles. The increased blood supply in turn excites increased inhibitory control of the sensory cortical cells. On the other hand, cardiac depressants and vaso-constrictors such as ergot may have a similar action. Negative and positive states of cerebral dynamics may give rise to an equal amount of cerebral inhibition. These alternating sensory states due to the modification of the circulation are well known to modify the milder forms of epileptic paroxysms. Since Crichton-Browne's advocacy of nitrite of amyl in status, McBride, Berger, Jolly and Bourneville have advised against its use in status epilepticus.

Solwith has injected Bonjeon's ergotine in several of his cases with benefit, but Browne and a number of others, have reported against its use. At best, ergotine is but a feeble spinal depressant and on rational grounds the status cannot be beneficially modified by the drug. Binswanger has recommended narcotics on rational grounds, while Browne regards them as pernicious. Combined with other drugs such as the bromides they are of distinct advantage. We have employed them in the convulsive stage of several status cases with marked benefit.

In the past few years amyl hydrate has been successfully used by Wildermuth in six cases. While this drug is uncertain in

its therapeutic properties, yet it has no marked depressive action upon circulation or respiration and may be tried in the convulsive stage of status. The following list of drugs not before mentioned in this section have all been tried and each one has its special advocate. Ether, chloroform, chloral hydrate, sulphate of morphine, hydrobromate of hyosine, salicylate of Physostigmine and hydrobromate of cocaine. Ether and chloroform are given with a view of immediately checking convulsions by paralyzing motor centers; they are only of temporary value, the better one by far being chloroform. Its inhalation should be undertaken in the early part of status, as it is too depressing upon the heart when there is much exhaustion from a large number of attacks. Ether may be administered in prolonged status as it is devoid of severe depression on the circulation and respiration. The attacks only disappear from the use of ether when given to the point of surgical anesthesia, and the seizures return before the consciousness is regained. As heretofore stated, anesthetics should never be employed except when death is imminent in convulsions, or until slower drugs, such as chloral hydrate and bromides may have time to be taken into the general circulation. When it is injudicious to employ anesthetics to the surgical point, they may still be used to modify the severity of paroxysms, especially in Jacksonian seizures, or status unilateralis following organic brain disease.

The use of chloral in status has many advocates and deservedly so, but when it is given in advanced status in 60 to 90 gr.-doses uncombined with other drugs, it is of doubtful value. Large doses of chloral uncombined with cardiac stimulants should always be given with extreme caution in advanced status. 40 grains of potassium bromide and 30 grains of chloral by rectum, to be repeated in 3 hours if the convulsion continues, is one of the routine treatments which we have employed. Chloral must be given early and before cardiac failure is imminent. At the first indication that the sedatives are becoming effective in controlling the convulsions, the dose of the drugs should be modified accordingly. Hypodermics of $\frac{1}{4}$ of a grain of morphine combined with the foregoing sedatives is often desirable, but the action of morphine given alone is too uncertain to be of signal value. If the convulsions produce great asphyxia and cyanosis, inhalations of oxygen may be given with advantage: it aids the circulation, respiration and urinary secretion.

10% sol. of bromine, in an emulsion with the oil of sesamum, is an excellent sedative for the status, given by rectum, but to be effective in severe status it must be given in large amounts. Its sedative action is about one-half that of the bromide salt, volume for volume. The after toxicity from the bromine sedation is much less than from the bromides but bromide is much slower in action than the bromide salts and, as we have already pointed out, the early sedation in the convulsive stage is of paramount importance.

Chloretone has been used in status to some extent in place of chloral, as the latter is very dangerous to weak hearts. However, chloral is largely efficacious in status because of its marked sedation on the cerebral circulation as well as on the brain itself. Chloretone not having this sedative power over the circulation is much less valuable than chloral; besides it produces on its own account in comparatively small doses a toxicity and a resultant delirium most pernicious. Chloretone cannot supplant chloral in the treatment of the status epilepticus.

Innumerable other remedies for a time have had their place in status treatment, but they never have seriously endangered the high regard in which chloral and bromide have been held. Status epilepticus is a state above all others in which weak and ineffectual compounds must be cast aside, as the time element in gaining control of the patient's disease is of paramount importance. Chloral ranks first just as preeminently in the treatment of the convulsive stage of status as bromide does in the medication of epilepsy proper.

To summarize our plan for the treatment of the convulsive stage: The "emergency prescription" should be administered after the first six attacks, either by mouth or by rectum; later, if status continues, use chloroform and continue bromide and chloral by rectum, or hypodermics of bromide. *Only so much sedation must be employed as may be necessary to control the severity and number of convulsions.*

THE TREATMENT OF THE STUPOROUS STAGE of status largely depends upon the severity and proper treatment of the convulsive stage. The treatment must be supportive. The heart and lungs need close attention, not only for the acute exhaustion entailed by the previous convulsive period, but for complications that are

liable to occur in the lungs. Alcohol should be used freely during the exhaustive state of coma. Although the cold bath will favorably alter the fever curve for a time, its action is but temporary and of no real lasting value. Undoubtedly, the prolonged action of the sedatives given in the convulsive state is in no small degree responsible for the severity of the coma, therefore as a rule drugs counteracting the antispasmodic should be given in the stuporous stage. The effects of chloral are quite easily overcome by whiskey, digitalis and strychnia, but the slower and more permanent sedation of bromide is not so easily counteracted. As soon as the exhaustion of intestinal peristalsis is recovered from sufficiently, diuretics and cathartics may be given. The arterial pressure which is always much lowered in the stuporous stage, should always be increased by hypodermoclysis or enteroclysis as a routine plan of treatment. When Cheyne-Stokes respiration is extreme faradization of the phrenic nerve, as advised by Wildermuth, may be tried.

To summarize the treatment of the comatose period: Counteract the exhaustion and sedation of the convulsive stage and watch for a possible return of convulsions; in the later stages stimulate and support the patient and treat complications promptly.

The treatment of the post-status period is generally supportive. Usually there is a freedom from attacks for a more or less long period of time, but this is too uncertain to warrant an entire withdrawal of sedation. Occasionally the convulsion may return in the post-status period and cause death, as the weakened condition of the organism is unable to withstand the renewed onslaught. For the delirium and the milder type of mania in the post-status stage 1/200 gr. of hyoscine combined with morphine 1/6 gr. may be given. It should be given often enough to keep the patient quiet and free from the motor restlessness which so frequently prolongs and delays convalescence. Insomnia is commonly a troublesome symptom in the post-status period; it is best controlled by small doses of morphine combined with paraldehyde, trional or chloretone. Hot baths and hot milk at night are often sufficient to overcome mild states of insomnia. Too little stress has been placed upon the milder remedies in restoring normal sleep and especially is this true in the insomnia after status; its rule of treatment should be largely comprised in rest and food. The post-

status mania rarely necessitates treatment by physical restraint. But such agents, if necessary, are best employed at the patient's home; mental aberration is almost always transient. Epileptics who may be insane in inter-status periods need to be watched carefully after status, as they are frequently suicidal and occasionally homicidal. If the patients do not exhibit great violence at the inception of the convulsive stage, no special change in the surroundings of the patients need be made; but if the contrary obtains, the patient's mattress should be placed on the floor in such a manner that other mattresses may be used for side pads to break the furious onset of convulsions. No epileptic should be physically restrained in the convulsive state as it only excites and exhausts. A roll of cloth should be employed to prevent the incessant biting of the lips and tongue.

The general care and nursing of a status case is fully as important as the medicinal. The temperature and pulse should be recorded hourly to gauge the degree of individual exhaustion occasioned by isolated attacks. The nurse needs to make notes of the convulsive phenomena; order of muscular invasion, if any; length of time of tonic and clonic spasm; the presence and absence of the typical symptoms of grand mal, etc., as the treatment is always based upon the bedside data. The kind and intensity of convulsive phenomena are only to be actually determined by grasping the muscle involved in different stages of an attack; the eye is always deceptive and many reported atypical phenomena of the status have their basis in the latter form of faulty observation.

The giving of proper and sufficient food to a status case has been found to materially aid in saving the patient's life. Foods should be in liquid form and highly nutritious from the start. Various preparations of milk, eggs and beef extracts may be given; but plain peptonized milk is by far the best food of all. It should be given often and in small amounts. All foods should be given early, before exhaustion and coma are profound. The earlier the food is given, the greater the chances are that its absorption will be consummated. As heretofore stated, pharyngeal and laryngeal paralysis is present in some degree even before coma is continuous between paroxysms, therefore many terminal bronchitides, lobular and lobar pneumonias are avoided by judicious feeding. Every attention should be directed toward

preventing the inhalation of food or vomited matter from forced feeding. As the difficulty of swallowing becomes progressively more marked, forced feeding by nasal or mouth tube may be resorted to. Occasional lavage of the stomach may be practised before the feedings. However, on the whole the great distress to the patient and the liability to interruption by seizures, renders the routine practice of forced feeding of doubtful value; we cannot recommend it. As a last resort, nutrient enemata may be given by rectum. The patient absorbs an infinitesimal amount of nourishment taken by the rectum in status, as secretive and absorptive activities are at a minimum. The autopsy in status cases usually discloses a quantity of undigested food throughout the intestinal tract. The little possibility that remains for rectal absorption should be taken advantage of for rectal medication and enteroclysis. The patient should be given plenty of water, a fact frequently overlooked in the confusion of treatment; often the first conscious demand of the patient is for water.

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EXPLANATION OF PLATES.

FIGS. 1, 2, 3, 4, 5.—Different phases of abstracted nucleoli. Fig. 2 presents a nucleolus greatly displaced within the nucleus. In every instance the intranuclear network is destroyed and the nuclear membrane is indistinct or entirely absent. Fig. 5 presents the nucleolus entirely without the cell. A fleecy mass of nuclear substance is still clinging to the nucleolus.

FIG. 6.—Large ganglion cell of motor cortex (case of F. D., see photograph and clinical charts) showing great irregularity in nuclear outline and marked chromatolysis. The whole cellular mass is reduced in size.

FIG. 7.—A cell of the third layer showing complete absence of nuclear membrane and chromatic substance. The cell protoplasm is vacuolated and the position of the nucleus is occupied by a granular mass. The nucleolus is absent.

FIG. 8.—The neuroglia overgrowth in the outer cortical layer. About one-half of the width of the outer cortical layer is here represented. The great irregularity in size and shape of the neuroglia nuclei is apparent.

FIG. 9.—Completely degenerated nerve cells of the third cortical layer. Leucocytes (a) are seen in juxtaposition to two of the nerve cells. (b) A completely degenerated nerve cell of which nothing remains but a vacuolated mass of protoplasm. (c) An abstracted nucleolus. It will be noticed that in these cells almost every vestige of nucleus and chromatic substance has disappeared.

FIG. 10.—Cells of the third layer with leucocytes in the neighborhood. The leucocytes (a a) are lymphocytes; (b) is a large mononuclear cell superimposed upon a nerve cell. The cell (c) is a completely degenerated one from which the anatomical elements have entirely disappeared.

The drawing of Fig. 8 was made with Zeiss Ocular No. 3, Obj. D. D. All the others were made with Zeiss Ocular No. 3 and oil immersion 1/12. All outlines were made by aid of Abbe camera lucida.



Fig. 1.



Fig. 2.

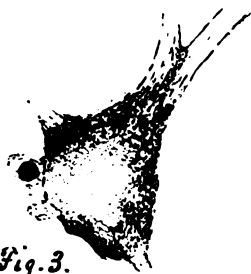


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 7.



Fig. 6.

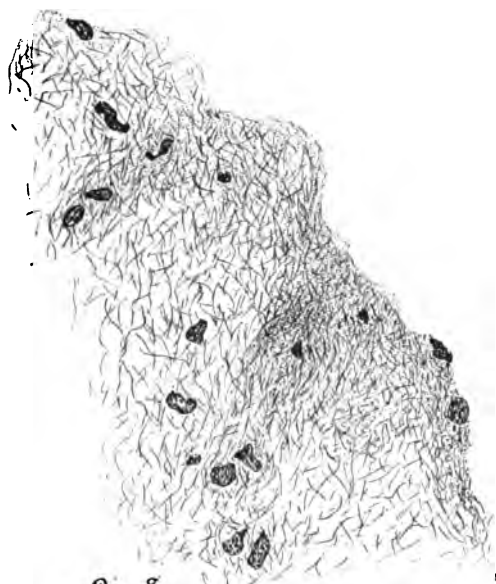


Fig. 8.

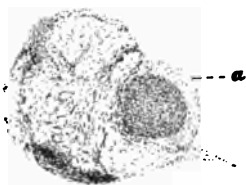


Fig. 9

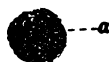
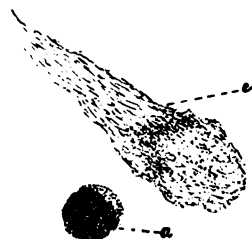


Fig. 10

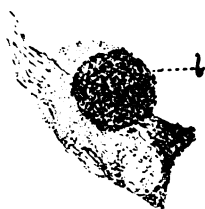




FIG. 13.

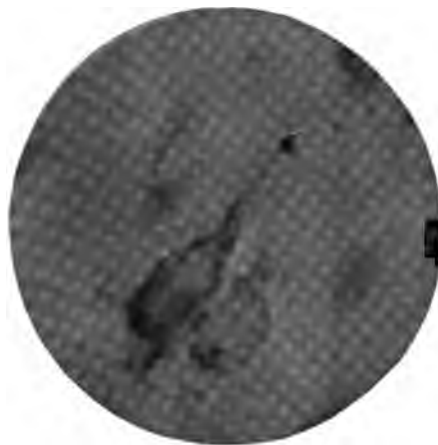


FIG. 12.



FIG. 11.

ON THE INFLUENCE OF MODE OF LIFE UPON THE BLOOD OF INMATES OF A HOSPITAL FOR THE INSANE.

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The relation between the somatic condition and that of the mind of the insane has been the subject of numerous investigations during recent years. It is natural that some attention should also have been given to the study of the blood in insanity. A priori, it seems very probable that the abnormal composition of the blood should affect the central nervous system and with it the mind. However, in order to find an interpretation for any somatic symptom in the course of an insanity it is necessary to establish its relation to the mode of life of the patient regardless of the mental condition. It is also important to investigate whether or not a given symptom can be abated by ameliorating the surroundings of the patient.

These experiments were undertaken in order to study the influence of different modes of hospital life upon the blood of the insane. Four classes of patients were selected for the comparative analysis of their blood; namely, newly admitted patients, chronics confined to indoor life for a considerable length of time, chronics working out-of-doors, and patients living in tents.

It was found that the blood of newly admitted patients contained only between 60 and 70% of hæmoglobin. Then followed the chronic ward-patient with a hæmoglobin between 50 and 70%; next the blood of patients working part of the day out-of-doors with a hæmoglobin between 70 and 90%, finally the highest percentage of hæmoglobin was found in the blood of patients living in tents.

The number of the red cells was parallel to the hæmoglobin.

TABLE II.
CHRONICS CONFINED TO INDOOR LIFE FOR A CONSIDERABLE
LENGTH OF TIME.

No. of Case.	No. of Erythrocytes.	Per cent. Hæmoglobin.	Diagnosis.	Remarks.
I.	3,300,000 3,680,000	60-65 55-65	Epileptic Insanity.	Physical condition poor.
II.	3,620,000 3,420,000	60-65 60-65	Melancholia Chronica.	Physical condition poor.
III.	3,600,000 3,610,000	55-60 55-65	Epileptic Insanity.	Physical condition poor.
IV.	3,500,000 3,480,000	55-60 50-55	Melancholia Chronica.	Poorly nourished; confined to bed.
V.	3,400,000 3,510,000	50-55 50-55	Melancholia Chronica.	Physical condition poor.
VI.	3,280,000 3,400,000	50-55 55-60	Epileptic Insanity.	Physical condition poor.
VII.	3,020,000 3,100,000	50-55 50-55	Melancholia Chronica.	Physical condition poor.
VIII.	3,040,000 3,060,000	50-60 50-55	Epileptic Insanity.	Physical condition poor.
IX.	3,600,000 3,450,000	55-60 50-60	Melancholia Chronica.	Physical condition poor.
X.	3,400,000 3,480,000	50-55 55-60	Melancholia Chronica.	Physical condition poor.
XI.	3,800,000 3,080,000	50-60 55-60	Melancholia Chronica.	Physical condition poor.
XII.	3,200,000 3,180,000	55-60 55-60	General Paresis.	Physical condition poor.
XIII.	3,800,000 3,810,000	50-55 50-60	Melancholia Chronica.	Physical condition poor.
XIV.	3,000,000 3,080,000	50-55 50-55	Melancholia Chronica.	Physical condition poor.
XV.	3,500,000 3,450,000	55-60 50-60	Melancholia Chronica.	Physical condition fair.

TABLE III.
CHRONICS WORKING OUT-OF-DOORS.

No. of Case.	No. of Erythrocytes.	Per cent. Hæmoglobin.	Diagnosis.	Remarks.
I.	4,150,000 4,200,000	80-85 80-85	Epileptic Insanity.	Physical condition good.
II.	4,220,000 4,200,000	75-85 75-85	Melancholia Chronica.	Physical condition good.
III.	4,180,000 4,210,000	80-85 80-85	Melancholia Chronica.	Physical condition good.
IV.	4,100,000 4,120,000	80-85 80-85	Melancholia Chronica.	Physical condition fair.
V.	4,250,000 4,200,000	80-90 80-85	Melancholia Chronica.	Physical condition good.
VI.	4,120,000 4,180,000	80-85 75-85	.....	Physical condition good.
VII.	4,240,000 4,200,000	80-85 80-85	Melancholia Chronica.	Physical condition good.
VIII.	4,350,000 4,230,000	80-90 80-85	Melancholia Chronica.	Physical condition good.
IX.	4,300,000 4,210,000	90-85 80-85	Melancholia Chronica.	Physical condition good.
X.	4,180,000 4,160,000	85-90 80-85	Melancholia Chronica.	Physical condition good.
XI.	4,240,000 4,200,000	80-85 80-85	Melancholia Chronica.	Physical condition good.
XII.	4,500,000 4,480,000	85-90 85-90	Melancholia Chronica.	Physical condition good.
XIII.	4,400,000 4,380,000	80-90 85-90	Melancholia Chronica.	Physical condition good.
XIV.	4,300,000 4,310,000	80-90 80-90	Melancholia Chronica.	Physical condition poor.
XV.	4,250,000 4,280,000	85-90 80-85	.....	Physical condition good.

TABLE IV.
PATIENTS LIVING IN TENTS, ON SPECIAL DIET WITHOUT TREATMENT.

No. of Case.	No. of Erythrocytes.	Per cent. Hemoglobin.	Weight.	On Admission.		Duration of Psychosis before Admission.	Diagnosis.	Remarks.
				Per cent. Hemoglobin.	Weight in lbs.			
I.	4,500,000	80-90	135	60	110	4 weeks.	Dementia Præcox.	Discharged improved.
II.	4,440,000	82-90	143	60-70	123	3 weeks.	Paranoïac Condition.	Marked improvement.
III.	4,500,000	82-90	161	60-70	130	4 weeks.	Dementia Præcox.	Marked improvement.
IV.	4,460,000	82-85	146	60-70	123	3 weeks.	Dementia Præcox.	Marked improvement.
V.	4,520,000	82-85	109	60-70	85	4 weeks.	Dementia Præcox.	Marked improvement.
VI.	4,540,000	82-85	150	60	132	3 weeks.	Dementia Præcox.	Marked improvement.
VII.	4,600,000	80-90	144	60-70	115	4½ weeks.	Manic-Depressive Insanity.	Discharged recovered.
VIII.	4,520,000	80-90	122	60-70	108	2 weeks.	Manic-Depressive Insanity.	Marked improvement.
IX.	4,520,000	82-85	151	60-70	133	2 weeks.	Dementia Præcox.	Marked improvement.
X.	4,600,000	80-90	142	60-70	121	2 weeks.	Dementia Præcox.	Marked improvement.
XI.	4,520,000	82-85	143	60	120	2 weeks.	Dementia Præcox.	Marked improvement.
XII.	4,620,000	82-85	130	60-70	115	3½ weeks.	Dementia Præcox.	Marked improvement.
XIII.	4,520,000	80-85	123	60-70	108	5 weeks.	Dementia Præcox.	Marked improvement.
XIV.	4,520,000	82-85	165	60-70	145	2½ weeks.	Dementia Præcox.	Marked improvement.
XV.	4,620,000	82-85	130	60-70	108	5 weeks.	Manic-Depressive Insanity.	Discharged recovered.

DINNER TO DR. EDWARD COWLES ON HIS RETIREMENT FROM THE McLEAN HOSPITAL.

On January 29, 1904, at the Union Club in Boston, a dinner in honor of Dr. Cowles was given by a few of his friends on his retirement from the superintendency of the McLean Hospital, after twenty-four years of service. Dr. George F. Jelly presided and Dr. Walter Channing was toast-master. A loving cup was presented to Dr. Cowles as a testimony of the love and esteem in which he was held by those present.

Dr. Jelly said in his opening remarks :

I suppose that I have been asked to preside this evening because I have been acquainted with our friend Dr. Cowles longer than anyone present, except Dr. Rowe, and my connection with the McLean Hospital antedates that of anyone here. It may therefore be proper for me to review, very briefly, some of the changes of which I myself have been cognizant.

I became an Assistant Physician at what was then called the McLean Asylum, in the summer of 1869. Dr. John E. Tyler was then the Superintendent, a man of fine character, of attractive presence, conscientious and able; a man whom no one could fail to like and respect, who was brought daily in close contact with him. He was conservative, but cautiously progressive. There were about two hundred patients at that time at the Asylum. The large rooms under the domes on either side of the institution were used as dormitories for chronic quiet demented patients. Danvers, the new Worcester Hospital and the Western Hospital had not been built, and, if my memory is correct, there were no private hospitals for the insane in the State, except that Dr. Rowe took a few patients at the Cutter Retreat, Pepperell, of which Dr. Heald now has charge, and Dr. Edward Jarvis had a few mildly insane patients at his home in Dorchester. At this time restraint was very freely used, with both the male and female patients. Almost all violent or actively suicidal patients were restrained at night by mechanical means, and female nurses were frequently required to sleep in the same bed with actively suicidal patients, who in addition wore a camisole. There were very few special nurses at night, the day attendants being required in case of urgent illness to relieve each other in their care. There was, of course, a regular night nurse or attendant on either side of the house, who called up the day nurses if necessary. At the McLean, as at every insane asylum in the State, sedative drugs were used quite largely. I joined what

is now the American Medico-Psychological Association in 1871, and I recollect that at one of the early meetings which I attended, much was said about restraint and non-restraint in insane hospitals, and the majority of the members strongly advocated the use of mechanical restraint as an absolutely necessary curative measure.

We had good men and women as attendants in those days, who did faithful work so far as they were instructed, but we knew nothing of training-schools then, and of the present improved methods of caring for patients. A good deal was done in the way of diversion and out-of-door exercise. There were classes in French, singing and drawing; bowling and billiards for both the male and female inmates, with dances, concerts and lectures. The institution did good work with the light we then had. Patients were cured, and were sent away its friends and well-wishers.

Under Dr. Tyler a gradual change was taking place and an era of development had already commenced; a more liberal policy was introduced. In the years that followed the use of restraint was much lessened, and the use of drugs was greatly diminished. The intercourse of patients with their friends was more free; more paroles were given; more special attendants were employed; the corps of night nurses was increased; the domes were given up as dormitories for patients, and were used for the night nurses; and a beginning was made in the employment of women in the male wards.

Then, in 1879, Dr. Cowles entered upon his superintendency, bringing to the work a long and varied experience in army life and the conduct of a large general hospital.

The hospital idea became more and more prominent in contrast with what may be called the asylum idea. In furtherance of this and in the new impetus which he gave to everything, the character of the institution changed. He founded the training-school for nurses, the first in any insane hospital in this country. In the general advance came the planning, the building, the equipping, the organizing and starting of the beautiful hospital at Waverley, which will ever stand a monument to him, with its well equipped pathological department, its department for pathological chemistry, its gymnasium, its system of baths and all that is required to meet the exigencies which must arise in any modern curative institution. Restraint is scarcely used and the use of powerful sedatives is almost given up.

These changes have been brought about in the past twenty-four years, during Dr. Cowles's administration, to say nothing of articles upon subjects connected with mental disease and lectures which he has written, which have added honor to the McLean and to himself.

He leaves his work there with a reputation undimmed and second to none of his predecessors.

There is one thing which I want to mention before I sit down and of which, perhaps, I should not speak, were we not all of us a sort of family circle here to-night. I allude to the personal relations which have existed

between Dr. Cowles and myself. I know he will pardon me. In these years we have been closely associated—many times in consultation, in court work and in trying to help each other. At the hospital I have always found the open door, the glad hand and the cordial welcome.

After years of public work, it is right and proper that he should retire from the harassing cares of the hospital, and should be permitted to use his knowledge and ripe experience in a more untrammelled way, in private life and private practice, where he can give more time to consultation and medico-legal work; and, as the oldest physician in the city actively occupied in the special work in which we are all interested, I desire to welcome him to Boston, to assure him that he will find himself among friends, and to predict for him an abundant success.

Dr. G. H. M. Rowe, of the Boston City Hospital, spoke as follows:

It gives me much pleasure to respond to the toast of good health and prosperity to Dr. Edward Cowles. I have undoubtedly known Dr. Cowles longer than any person present, and no one here is more indebted to him than myself, although there is no one of us who does not owe him much, in one way or another.

My acquaintance with Dr. Cowles goes back to the first month of my Freshman year in Dartmouth College. He had graduated two years before my entrance, but with his characteristic loyalty to everything to which he once commits himself, he was zealous to his college allegiance. My first debt to him was his persuasion in pledging me to the Alpha Delta Phi fraternity, a society which I afterwards learned to love, and to which I owe much.

My second debt was on the day following my graduation, when he dissuaded me from becoming a pedagogue and showed me the way to enter upon my desire for the study of medicine.

My third and greatest indebtedness was in the fact that he was largely instrumental in my being chosen to fill the vacancy caused by his resignation as Medical Superintendent of the Boston City Hospital, which position he had held for seven years. As you all know, he then took up the Superintendency of the McLean Hospital, at its former location in Somerville.

The work of Dr. Cowles and his regeneration and advancement of the Boston City Hospital in many ways is too well known to be recounted here. He elevated it from a position quite ordinary among the hospitals of that time; under his administration, it was enlarged to twice its size when he assumed charge; new buildings were added in which many new features of hospital construction were first used, and although at that time new, they still remain as accepted features of good hospital construction. During his first years there, hospital gangrene, pyæmia and surgical sepsis obtained to a frightful extent. By his work in the reconstruction of the system of heating and ventilation, all blood-poisoning diseases, except

those due to the surgical technique of that day, disappeared. Many improvements and reorganizations based upon military lines, and suggested by his army experience, were perfected. He surrendered the Hospital to me, reconstructed in its physical features, improved in its personnel, and reorganized in its administration.

For more than forty years, our work has never been a great way apart. Our numberless conferences upon hospital work, our mutual interests in each other's welfare, and best of all, the warm personal friendship that has existed between us, unbroken in all these years, might beguile me to speak at such length upon the many personal achievements of Dr. Cowles, that your patience would not endure.

I shall confine myself to one theme only, namely, the great debt that is due to Dr. Cowles as a pioneer in the cause of training schools for nurses. To this work he has given a marked impetus, in general hospitals as well as in hospitals for the insane.

In 1878 Dr. Cowles, with the assistance of Miss Linda Richards, the first American woman in the United States to hold a diploma as a trained nurse, began the Training-School for Nurses at the Boston City Hospital. I recall several notable and interesting facts of this period of hospital history. Previous to 1878 there were only two well organized training schools in the United States—the Bellevue Training-School in New York and the Massachusetts General Hospital Training-School in Boston. I do not overlook the fact that there had been established nominal schools for nurses at the New England Hospital for Women in Boston—and this the very first—and one at the New Haven Hospital in Connecticut. While these two schools had some classes, desultory lectures and blackboard work, they could not be classed as training-schools, except in the way of small beginnings.

You will recall the fact, also, that no training-school previous to the one established by Dr. Cowles, was an integral part of the Hospital in which it worked, but was a separate and distinct outside corporation, furnishing to a hospital so much nurses' work for so much wages, the school finding its material for training and the hospital having its patients nursed. There are many interesting phases that were evolved out of this period that would be profitable to discuss, did time permit. The Boston City Hospital Training-School was the first in the United States that was a part of the hospital organization itself, and independent of outside assistance.

Upon the thorough groundings of our training-school, so well thought out and established upon a good basis, has been built the training-school of to-day. Its work, its growth, its nurses as a product, and the repute in which it stands, are hardly becoming for me to discuss. Much that it has attained is due primarily to its right beginning, and to Dr. Cowles all credit should be given. But Dr. Cowles' greater work in the cause of nursing lies in the fact that he is the pioneer in training-schools among the hospitals for the insane.

In taking up his work at the McLean Hospital, the deficiencies in the

nursing system in that hospital were apparent. There were at that time no training-schools among the hospitals for the insane in America, from which to copy. Dr. Clouston of Edinburgh, had written much upon the subject; the difficulties were discussed, and suggestions made that at this time seem crude, unwise, cumbersome and unprofitable. Dr. Clarke, of the Glasgow District Asylum, followed Dr. Clouston's suggestions; some class instructions were given, a few lectures, and some advice as to the management of the insane; but if our memory serves us rightly, no school for training attendants upon the insane was formally scheduled, and little or no force put upon bodily nursing.

The McLean Training-School for Nurses was established in 1882. It was the endeavor to train both men and women in a well-developed curriculum of class work, lectures, demonstrations, in bodily as well as mental nursing, with specialties in nursing not hitherto considered a part of a nurse's work among the insane.

With Dr. Cowles' great work at the McLean Hospital we are all familiar. The further development of the professional work may yet greatly distinguish his fame, but the result in the instruction of nurses upon the insane has revolutionized that work and will obtain as the standard upon which others must for a long time be established.

In closing, I desire to express to Dr. Cowles the great gratitude that I personally owe to him, and to wish that the Indian summer of his life may be peaceful, full of enjoyment and of satisfaction in the great work that he has so successfully accomplished, to a distinguished degree.

Dr. John B. Chapin, superintendent of the Pennsylvania Hospital for Insane, who was unable to be present, said in a letter:

I well remember my first meeting with Dr. Cowles on the occasion of a visit to this department of the Pennsylvania Hospital about the year 1880—a date prior to my connection with it. It was his first appearance in our Association, and I presume he looked upon us with probably as much curiosity as we observed him. Then we knew little of his record, or the quality of his previous service, but as we now look over the years that have intervened, we have the record of a man who has magnanimously performed the duties and responsibilities of his position as they have come to him. These duties, and all of his professional and literary work, have been performed quietly, and while they have inured to the benefit of the whole profession and the interests of humanity, we can affirm as others have affirmed that he has created a hospital and a professional service which, although ahead of his time, will yet be a model to those who may come after us.

Some years ago I had occasion to prepare a notice of hospital nursing service, and as a result of a cursory examination of its history I concluded that Dr. Cowles was the first in our country to undertake the systematic training of nurses for hospitals for the insane—a work which has been followed very generally throughout our entire country, and

also a work which has become well known abroad as being identified very closely with Dr. Cowles and his hospital.

It is also a pleasure to pay a tribute to his professional work, which has interested and concerned us all very much. While perhaps but few have been able to follow him in his work, because we have not understood it or did not have the opportunities and preparation for it, we no less admire and honor him for the lessons he has left us at Waverly. While often on such occasions fulsome praise may be bestowed upon one whom we might delight to honor, yet I think I would express the feeling of our specialty not only on this side of the Atlantic, but in other lands, that he has been foremost in doing what has been accomplished. If he has not accomplished all that he has hoped to do, he has laid the broad foundation and left behind an inspiration which will never be lost. More than all this, I regret that I am not present with the company who will meet Dr. Cowles with you. I would most delight to take him affectionately by the hand, and, while he is in a state of retirement, with judgment and mental powers undimmed as yet by age, thank him for what he has done, and bid him courage in the years that remain to him. In his retirement, which has come as a shock to all of us, I hope he may find courage and consolation in what he has done, and continue to pursue such literary and scientific work as may come in his way. In his retirement we must sympathize with him deeply, and feel that our specialty has sustained a decided loss.

Dr. Charles F. Folsom said:

Our friend has been and is the foremost figure in the tremendous advances that have been made in this country, during the last quarter of a century, in the intelligent and rational management of the insane and the scientific administration of the hospitals for their treatment, with all which that means.

Several years before the appointment of Dr. Cowles to the McLean Asylum, I visited many insane asylums in a dozen States. None were better than asylums, many not much more than boarding places for the insane. Since 1879 I have read every one of the reports of the Superintendent of the McLean Hospital for the Insane, and have noted with great gratification the steady pushing forward; and I have seen Dr. Cowles's influence spread from these all over our country, raising the asylum to the level of the hospital, and making of the Association an active working medical society.

I consider the scientific investigations and the laboratory work at the McLean as of the highest possible value; and I venture to predict that ten years hence they will be regarded as a foundation of that sound physiology and pathology which fixes insanity as a disease with a physical basis, and to be treated as such.

It is with deep feeling that I avail myself of the privilege to testify to my great admiration of the superb work which Dr. Cowles has done.

Dr. Edward N. Brush said:

To me was assigned the task, Dr. Cowles, twenty-four years ago, of writing in the JOURNAL OF INSANITY the brief notice which chronicled your appointment to the position from which you now retire with so much honor, with so many well-won laurels. I think I may not be charged with revealing any of the secrets of the editorial room if I say that your appointment was not heralded with any great enthusiasm. You were an outsider; you had been reared in the medical service of the army and afterwards in the direction of a general hospital. What did you know about insanity or the care of the insane or the conduct of an insane asylum? We all waited with interest, with curiosity and, I may add, with expectation of failure on your part.

You soon showed that our measure of your knowledge, if not of your capacity, was in some degree correct. You did not know much about the conduct of an insane asylum, and what is more, you showed no disposition to learn; but you did know, and you did exhibit, an ability to teach all of us many things about the conduct of a hospital for the insane.

It is therefore to me at least, Dr. Cowles, a pleasant duty to stand here this evening and tell you how much your example has inspired many of us; how much we feel and believe you have done to advance American psychiatry and American medicine. I feel that I personally owe you much. Like many of my friends, like many at this table, I have come to you in times of doubt and worry and found in your wise counsel much that has aided and comforted me, and at all times I have felt that in your work at McLean you had planted a banner far in advance on the skirmish line upon which those who hoped to achieve any success in the battle with disease must keep their eyes steadily fixed.

I have in conclusion, Dr. Cowles, another message to deliver. I have had, as you know, for some time a patient under my care formerly under your observation at McLean. When I told her I was going to Boston and the object of my visit, she charged me to convey to you her love, the best, deepest love of her heart, and to say to you that what you had done for or said to her had gone with her and had been a comfort to her all the days and months and years since she had left your care, and that the great regret of her life was that she had not in her early years fallen under your kindly direction and care, for then she believed she could have made something of her life with that assistance and guidance.

Dr. Rowe has spoken of the Indian summer of your life. One recalls the sunsets of that delightful season, when the clouds are painted in purple and gold and the western sky seems like the entrance to the City of Gold, and then the smoky, hazy days with their balmy atmosphere which lulls one to rest and quiet contemplation. Such, my dear Doctor, may all your days be, and as you look backward over the days that are past, the haze that covers the landscape and tones down its rough features and adds an elusive and curious beauty to the distant hills and

valleys, will in a like manner dim the disappointments and cover the trivial worries of the past, and only the softened and more beautiful aspects of your life-work will appear to you, and then the golden glow of the west will appear, beautiful, splendid and heralded as it is to-night by your friends, "well done." May you long live to enjoy these well-earned Indian summer days.

Dr. Blumer, speaking to the toast, "Dr. Cowles as a Hospital Organizer,"

Quoted Mr. Furniss, of Philadelphia, who ten years ago had said anent the retirement from office of Provost Pepper, "We fill high the sparkling bowl to the memory, and we pile high with wreaths the tombs, of men to whom when living we vouchsafe not much more than a supercilious nod. They may have craved a word of sympathy or of admiration, and we are marble-mute, but no sooner are they where 'Honor's voice' cannot 'provoke the silent dust' nor flattery soothe the dull, cold ear of Death' than we burst forth into applause of their deeds, rend the air with our peans of lofty praise and erect their statues." He thought that the charge of neglecting Dr. Cowles could not be laid at the door of his loving brethren, since there was no man whose pre-eminent merit had been more generally recognized, no man whom they had greater delight in honoring for his achievements on behalf of psychiatry. He would not interpret the toast literally. Previous speakers had already told the tale of his many-sided prowess. Suffice it to say that Dr. Cowles was recognized to-day as the foremost all-around psychiatrist of the United States. Someone had defined genius as a capacity for and mastery of detail. Measured by that definition, Dr. Cowles was a genius. A New England philosopher had said that a genius was a man whom God had sent into this world marked "good for this trip only" and "not transferable." Dr. Cowles answered to that description also.

The speaker rejoiced that Dr. Cowles's mantle had fallen upon the shoulders of one who, by reason of long and capable service to McLean Hospital and unswerving loyalty to his chief, was peculiarly fitted to carry on the good work along the lines of enterprise laid down by his predecessor. Dr. Blumer remarked that when Hegel lay dying, he deplored the fact that he was leaving the world with only one man in it who understood his system—and he didn't really, he added, regretfully. He thought that if there remained any imperfections in Dr. Tuttle's knowledge of the situation at McLean, that defect could easily be made good by Dr. Cowles in his rôle as member of the Consulting Board. He concluded with a reference to the affection and esteem in which all present held their honored guest and invoked the blessing of Heaven upon him in his withdrawal from the sturt and stress of life.

Dr. Hurd spoke as follows:

I have been asked to speak of the scientific work of Dr. Cowles, and I first call your attention to a statement which he made in 1888 in his

admirable paper, "Insistent and Fixed Ideas," to the effect that the sick-room is a laboratory with its crucial experiments as real as those in which culture experiments are instituted in bacteriology. To this he adds with approval the words of Kraepelin, "Only by the inner connection of brain pathology with psycho-pathology can we succeed in finding the laws of the reciprocal relation between somatic and psychic disturbance and thus get a really deeper understanding of the phenomena of insanity." These brief sentences are the key-note of his conception of laboratory work in a hospital for the insane.

In the scientific work which he has inaugurated at McLean it is gratifying to observe in what an orderly, systematic way he has pursued these inquiries and how promising have been the results already secured. At first he had the skilled aid of Dr. Noyes, now of the Boston Insane Hospital, who investigated the relations of so-called physiological psychology to morbid mental phenomena and the bearing of fatigue, exhaustion, sleep and mental hebetude upon the superficial and deep reflexes and upon other automatic nervous processes. This study was continued by Dr. Hoch, who brought to his investigations the methods of the pathologist and skilled clinician, and thus was able to interpret clinical findings by the pathological processes which he had detected. I have no hesitation in saying that these clinical observations and psycho-pathological studies have been unexcelled in the history of American psychiatry, and that the work initiated by Cowles and carried on by Hoch will be an example to other institutions for years to come.

While these studies were in progress it became evident that painstaking investigations in bodily metabolism were needed, and tentative work in special forms of insanity followed under the lead at first of Hibbard and later more systematically under Folin. To the latter we are deeply indebted for new processes of investigation and thorough and painstaking studies. The foundation which he has laid is ready for the superstructure of physiological deduction which I am informed is soon to be erected upon it by the added labors of an expert physiologist. I have learned, in fact since I sat down at this table, that funds have just been assured for the completion of this work which is expected to interpret the results of physiological chemistry in terms of physiology. All honor to our friend who has had the genius to formulate this work and the persistent energy to prosecute it until the end seems in view!

I rejoice that the well-earned leisure which is now his will enable him to put upon paper the results of his many studies, for the benefit of our common work. I congratulate him that he has so much to do. We need fuller details of his psychological studies, of his methods of training and educating mental nurses, of his scheme of instruction for medical men in psychiatry and, above all, of his mature conclusions upon hospital organization and administration. If he does all which we desire to have him do, I am sure that his so-called retirement will be a period of intense activity.

Whether he accomplishes all we have planned for him or not, I am sure that whatever he does will make the world richer. In conclusion

I wish to assure him of the enthusiastic admiration and warm affection of every toiler in the domain of psychiatry. We revere him as our master and we love him as our brother.

Dr. Charles P. Bancroft said:

It gives me pleasure to add a word to what has already been so appropriately said at this time. It is always a pleasure to behold a man as he grows older in years retain the mental vigor and elasticity of youth. It is inspiring to see such a man still standing on the firing line and putting in as vigorous work as those who have just enlisted in the service. To me Dr. Cowles has always been an incentive to renewed personal work, because of his unlimited energy and enthusiasm in the prosecution of not only the work of hospital construction and organization, but of scientific research as well. It is so easy for a man after twenty-five or thirty years of continuous work to let up a little that the picture of a man working just as energetically and enthusiastically at sixty years of age as at thirty is almost inspiring.

The problems that Dr. Cowles has worked out in both general and special hospital work during the past thirty years include the best of all that has been done during a wonderfully active period. The introduction and permanent establishment of training-schools for nurses in general hospitals and later in special hospitals for the insane received prompt recognition from him. I have always regarded it as extremely fortunate for the insane that a man of his special qualifications should have been transferred in the very strength of his maturer life from general to special hospital work. For to his zeal and enthusiasm more than anything else were due the introduction of trained nursing in asylums for the insane and the incorporation in these institutions of the hospital idea.

Not only does Dr. Cowles deserve great credit for the remarkable success he has achieved in the more practical details of hospital construction, but especially is he deserving of praise for his persistent prosecution of the more purely scientific study of insanity. It is indeed remarkable that a man should take up the study of psychiatry somewhat later in life than the majority of alienists and achieve the success that has been his. This success is an enduring testimonial to his energy and scientific spirit. Nowhere has Dr. Cowles's success been more pre-eminent than in the field of medical expert testimony. His clear exposition of the mental characteristics of a case, his logical grounds for his belief, has always made him a strong expert witness. But especially is Dr. Cowles deserving of praise for the influence he has exerted with the courts and with the legal profession toward attaining the expression of an impartial and purely scientific medico-legal opinion. His efforts in this direction have done much to elevate the character of expert testimony and save it from popular ridicule.

To the conscientious members of the medical profession I think nothing has been more unsatisfactory than the way in which experts are sum-

since his retirement, there is hope and even an expectation of its still further development. In connection with the work of the laboratories a library, of 3400 volumes and over 2000 pamphlets, has been collected which is particularly rich in current medical literature.

The gymnasiums, our medical work-shops, houses for occupation, recreation and treatment of the patients, also have gradually evolved from the bowling alleys and billiard rooms of former days, till now the houses in addition contain the fully equipped gymnasium, work-shops, hydro-therapeutic apparatus, with rooms for reading, music and art, and we would feel lost without these facilities and the valuable services of the two instructors in physical training.

Through the wise foresight of Dr. Cowles the location originally selected for the hospital at Waverley was changed to give the present beautiful outlook, and the floor plans of all the houses are his. He was the adviser of the architects throughout their work, and the hospital represents his professional knowledge. It was built for the advantage of the patients rather than for ease and economy of administration.

The many changes in methods of care and treatment, as well as in the construction of the houses, have brought a considerable increase of the medical and nursing service as well as of that not so directly concerned with the immediate care of patients. Since 1880 the official family has increased from eight to twenty-five, and the nurses from sixty-four to one hundred and thirteen, with the addition of twenty ward-maids. The yearly income of the hospital during this time has increased from \$120,000 to \$213,000.

Ever zealous in promoting all good things, versatile, anxious to furnish his assistants the most ample facilities for their professional work, inviting and giving all due weight to their opinions, he won their respect and esteem. I may justly speak of Dr. Cowles as an alienist who has made many valuable contributions to psychiatry, whose powers and zeal have not been limited by advancing years, and who still points the way to younger men. An expert in hospital construction, whose ideas are embodied in many hospitals in this country, and whose writings have secured international recognition. An administrator of great experience and wide reputation. A man of excellent judgment; of wise foresight; of firm will; of gracious courtesy and kindly tolerance for the immature opinions of younger men; always an optimist.

The new McLean Hospital, with all that the name implies, is his work, and it will stand as his memorial in the years to come.

Dr. Channing in presenting the loving cup said:

It signified the love and respect in which Dr. Cowles was held by all his friends. If he could be allowed to speak of the symbolic significance of the cup he would say that the symmetrical shape and outline of the cup well represented the consistent and steadfast career of Dr. Cowles. He had always pressed on without ceasing toward one goal, which was

to do the best he could both for the scientific and practical side of his work. One of the handles might signify character; another, ability; and the third, capacity for work; and the wine filling the cup should stand for achievements. We must all say that with these the cup was filled to the brim.

Dr. Cowles, in response to what had been said, replied:

My dear friends:—"Here's to your good health and your families! May you live long and prosper!" I feel like a Rip Van Winkle suddenly awakened to see and hear incredible things. Dr. Channing asked me, some weeks ago, to meet him here this evening, and lately intimated that others would be present. But except two or three of you I did not know who were in this conspiracy concerning my peace of mind, or that you could have thought such things as you have been saying here. It is appalling to think of trying to make good such an estimate of my unfinished work, and it is with mixed feelings that I have received the congratulations and condolences of my friends since the announcement of my retirement from the hospital.

Some, with words of cordial welcome, invite me to come down from the high hill in the country to the delectable city, where everybody knows you cannot see the city for the houses; from Boston, they say, one can go to interesting places—even to Germany, and learn things, or to Egypt and see the world as good Bostonians do. But one asks himself, why go to strange countries when there are so many good things waiting to be done at home? Then I remember looking from my windows on the hill-top at Waverley at the extensive and beautiful view; beginning with Malden and College Hill in Medford on the northeast one can trace the horizon all the way around to Prospect Hill in Waltham in the northwest; it is not the least to me of the interesting things in this rare view of greater Boston that one can see the very place on Chestnut Hill whence Dr. Channing radiates his unfailing friendliness. Asking myself what the attraction is to go from this to the streets of the town, and be shut in to the seclusion of a city office, I am reminded of the old story of the Boston man who traveled widely in foreign lands. Finally arriving in Egypt, one day at the top of a pyramid he gazed eagerly about him and exclaimed, "Thank God, I have found a place where you can't see Tuft's College!" Now that the modern hospital is coming to be like a college with its several scientific departments, one might be expected perhaps, after long years and names being changed, to feel even thankful for a change of scene from Waverley.

But though there are many regrets, there is also, among the mixed feelings, that kindly effect of nature's law in declining years on the keenness of the trials of life. Stevenson describes the Master of Ballantrae, living with his granddaughter, and her loneliness after her two cousins, his grandsons, had gone away because they had quarrelled for love of her. She often sat with the old gentleman by the fireside, and it is told in the story that "when she wept he consoled with her like an

ancient man that has seen worse times and has come to think lightly even of sorrow." Yet there is truth in the Italian proverb that "you cannot tell the age of the heart by the gray of the hair," and as memory shifts the scene one's feelings may be cast down, or they may be lifted up by new proofs of the sympathy and encouragement of his friends. Again other natural feelings will arise, and their expression by somebody gives great relief, as when my good friend from Providence comes and tells me what to say, with his story of the retired bo'sun and the strong words of his message every morning to an imaginary captain. No one can deny that in the conflicting vexations of institution life there are times when sea-language seems to fit the case. So one may run the gamut of all the emotions in trying times, by day and night, with little profit, or again with much comforting of spirit. But after all a calmer philosophy should prevail; and while I thank Dr. Blumer for all the beautiful things he has said in his usual graceful way, I appreciate now especially his suggestion that the control of the emotions is a form of genius worth striving for. Thus accepting with equal mind both congratulation and sympathy, I find that my replies take spontaneous expression in such figure of speech as "it is like pulling oneself up by the roots," or "leaving the plough in the furrow." There must be some lingering regrets, for the roots grow deep in such a soil, and the desire is strong to turn the furrow around that beautiful curve yonder, now so near but that has seemed so far distant in the field for so many years. Yet I must testify to the beneficence of the principle of retirement from official duties which I can accept as a relief from care, while yet there may be the hoped-for opportunity to reach ideals not yet quite attained. But in this view of the situation there is great consolation in turning over all these interests to Dr. Tuttle, who has borne so large and helpful a share in the whole course of these labors. He has been more than an able and faithful assistant—he was always rather my loyal personal friend and partner in all our enterprises. Whatever was confided to him was always well done; without such complete freedom as he gave me, I have often realized that my work could not have been done as it was.

There is yet something appalling even in hearing these exceedingly generous estimates of an unfinished work, when one thinks what it might mean to have it fail. You must let me protest against some of the things that with great self-forgetfulness you have ascribed to me, but in which I have only borne my share. I cannot mention all, but one was Dr. Bancroft's reference to the efforts to improve the methods of our expert testimony in which others have always taken an active part; he, like the rest of you, is seeing the virtues that shine in his own eyes. We need not look far for one whose modest fidelity to the right in all things has made him conspicuous in this. It is to Dr. Jelly that what you have said belongs; and the very generous words he has spoken here make me very grateful.

I am glad to see here my old friend Dr. Gay; I am reminded of that first day—both his and mine—at the Boston City Hospital in 1872;

whenever I think of that day I always think of him and how each welcomed the other to the scene. Dr. Rowe has mentioned some reminiscences of things between us there, and some earlier ones in which we take mutual delight. We are always hearing that some of our most fortunate turning-points in life come in events that seem accidental or commonplace at the time, or even when disappointed in our most cherished plans. The delightful surprise of seeing Dr. Hurd and Dr. Brush, who have come so far to be here, prove that they are friends indeed; and Dr. Chapin's letter is like him; it is one more expression of the sincere and unchanging friendship with which he has always honored me ever since our first acquaintance.

What can I say to my dear Dr. Hurd, to whom I began to incline at first sight, upon whom I have come to lean more and more as my guide, counsellor and friend. He has told you some things about this, in his ever generous way, that I know are true; but the other things that both he and Dr. Folsom have said express an appreciation of what we have tried to do at the McLean Hospital so far exceeding anything in most hopeful imagination, that I dare not trust myself with words of acknowledgment.

I am surprised by what you are saying here because it seems to me that the new work at the Hospital is still at the stage of promise, rather than of accomplishment. Many of you remember, for you were there, the like occasion to this, when you gave me your congratulations for the completion of the new hospital eight years ago. I said then that it seemed to me we were only just ready to begin the real work we aimed to do. Some progress has surely been made since then, though it has been so much retarded for want of means; yet the problems have become plainer, and the way in which the original plan should be carried out appears clearer. I thought before coming here this evening that it might interest you to explain the plan of inquiry that should make most effective the important beginnings we have already gained in pathological chemistry. But there is no time now; this occasion is very different from anything I expected. I should like to say, however, in a word, that the logic of the whole proceeding at Waverley rests upon the principle that the sick insane person should be studied from the point of view of general medicine. The general physician in his clinical work must begin with physiology and recognize symptoms as disordered activity. Then comes the search to explain the functional derangement by interferences and possible structural changes. But the great modern progress in physiology is emancipating it from anatomical conceptions, and methods of teaching have wholly changed. You cannot deduce function from structure; you must study function as function, especially in psychiatry; and physiological chemistry underlies both structure and function. Mental physiology is but one branch of general physiology, and chemistry is subsidiary to all physiology. Now that we have the chemical department so well established at Waverley, I am glad to tell you that its continuance is assured; not only this, but there is certainly no intention of reducing the present clinical and pathological work. It gives me great pleasure to say also that, this very

day, the way has been made clear by a gift of \$6000, for the especial purpose of a two years' service of a physiological laboratory, under charge of a competent physiologist who is also expert in general physiology; he has done some excellent work in experimental physiology and is experienced as a teacher of physiology of the nervous system in medical schools. Thus, after many years, comes the assurance of having the plan of scientific research in the fundamental problems of psychiatry fully organized as the original conception. Two years is, of course, a short time to gain justifying results, but you see what was done in three years with chemistry, from which little result was anticipated. If the newly organized plan can only be well sustained I feel safe in believing that a large part of Dr. Folsom's encouraging prediction will come true in one-half of the ten years' time he has set for it.

But, this occasion, your presence here, and what it means to me! I am keeping away from the things of which my heart is full. I am almost afraid to speak of what Dr. Channing has said—you must see that I cannot speak it. And this beautiful loving cup! I shall always see your sincerity in its honest silver, your appreciation in its golden lining, and in its triple handles the welcoming grasp of your cordial friendship. In receiving all this and the kind words that have been spoken here, I feel that these are my richest rewards; and this evening will be among the happiest of my memories, all my days.

American Medico-Psychological Association.

PROCEEDINGS OF THE SIXTIETH ANNUAL MEETING.

MONDAY, MAY 30, 1904.

The Association convened at 10 o'clock a. m., in the banquet hall of the Planters Hotel, St. Louis, Mo., and was called to order by the President, Dr. A. E. Macdonald, of New York, N. Y.

THE PRESIDENT.—The first pleasant duty that devolves upon me as your president is that of introducing to you the gentlemen who have responded to this invitation of the committee of arrangements, and will welcome you to the State and City wherein you meet; and first the Governor of the State, the Hon. A. M. Dockery. It is an open secret, though he is himself too modest to obtrude the fact, that the Governor is also a physician, and I know it will not lessen the pleasure you will have in hearing him, that he is a member of our profession as well as governor of his State.

GOVERNOR DOCKERY.—Since the opening of the Exposition the pleasant duty has devolved on me of welcoming a great many organizations holding their annual meetings in this city. I have performed that duty about three times a week, and my vocabulary has been practically exhausted by reason of the demands upon it, to extend in formal language welcoming words to these societies. I can say, however, that I have greeted no association that afforded me more real pleasure to welcome, than this convention of physicians.

Missouri never fails to express her old time hospitality. And yet I am not sure but that old time hospitality is a little decadent now, and necessarily so, because the world is growing so populous. Conditions, therefore, differ from those of fifty years ago. Then everybody was welcome, and it was considered almost an offense to offer remuneration for a night's lodging. My welcome may not take on that extreme old time form, but in the warmth of cordial greeting I welcome you to this city and its wonderful exposition. I am sure you will visit this greatest of all exhibits of the world's resources, and do not forget to visit the Missouri building. It is a beautiful architectural gem, and in convenience of

arrangement, beauty and richness of furnishing, it fittingly typifies the grandeur of our State. Go to the Missouri building, and you will receive an old-fashioned welcome.

The practice of your profession is a benediction to the human race. It restores the wasted frame and relieves both physical and mental ailments. Not all diseases are curable, but the duty so well performed by you leaves no opportunity for regrets, while the gratitude of these to whom you minister is the frank expression of their appreciation.

You are called to the responsible charge of great institutions to relieve the exhaustless necessities of those most sadly afflicted. Man's intellect is the essential attribute which lifts him above the animal world. Nothing can be more pitiful than a mind dethroned by disease. The brightest minds have yielded to its insidious blight, baffling so often the highest skill. The knowledge, however, that every known means has been employed brings more satisfying reward than the largest fee that could be paid.

Yours is essentially a mission of mercy and charity. Under your ministrations the afflicted are restored to health and happiness, and the baneful shadow of insanity gives place to the sunlight of reason. It is almost like the resurrection, because a mind dethroned leaves the vacuum of death. Its restoration brings joy and gladness to the patient and the physician, as well as the family and friends.

The researches of the medical scientist have made marvelous advances for the profession. The same progress noted in the practice of medicine and surgery is apparent in all avocations, but in none more so than in the medical profession. From the old time methods of treatment when blood-letting, quinine and calomel were substantially the only sheet anchors of the physician we have progressed until now new and effective remedies and improved methods are open to the medical world. I can remember when I was a young physician, just starting out to practice (it was not very long ago either, for I do not want the ladies to think I am old), when blood-letting was considered one of the essential remedies. Calomel and quinine were the staples. The first thing I did when visiting a patient, was to examine the tongue and the pulse. But when I prescribed remedies it did not make much difference as to the speed of the pulse, or the appearance of the tongue, I always gave calomel and quinine. (Laughter.)

The triumphs of the medical and surgical art to-day are available not only to the wealthy, but by means of public hospitals are within easy reach of the humblest and the poorest.

Many schools of medicine have sprung into existence, but with all the changes the old school of medical faith has maintained its supremacy.

In our time the work of the specialist is largely exploited. Confining himself to a single branch of medicine or surgery the practitioner accomplishes more for the ills of humanity than would be possible should his ability be distributed over the whole field. The education of the specialist must be as thorough as that of the general practitioner, but building upon this broad and sure foundation his energies and talents are then devoted

to a particular branch, and the result is advantageous both to the specialist and the people.

We are now on the threshold of the twentieth century, the most marvelous century of the ages, the age of steam, electricity and invention; and because of these mighty forces there has been more progress in the medical profession during the last thirty years than was made in two hundred years before. Taking a comprehensive view of all the avocations and industries of life, all the inventions of this age, we find that within the last fifty years we have seen more of real advancement than the world saw in ten thousand years previous to this time. I am glad to know that the profession with which I was once actively identified has kept pace with the spirit of the times, and that no branch of the profession has done more to bring health and happiness to the human race than that represented by the men who have charge of the asylums of the country. (Applause.)

The family physician becomes unconsciously the family mentor. His knowledge of physical and mental defects, if there be any, makes it possible for him to advise where none else could. In the domain of confidential intercourse with the family he exercises exclusive prerogative. Life and happiness are in his hands. Rightly directed his opportunity for good is practically limitless.

The lame, the halt, the blind, and all those otherwise afflicted appeal to the wisdom and learning of the physicians. The dark, cold and stormy night finds him as ready to perform an errand of mercy as when the sun is bright and the air balmy, when the soft southern wind first stirs the tender leaves of the springtime.

Your profession, in its relation to other avocations by which men gain a livelihood, in its tender ministrations to mankind, towers above them all as the mountain peak towers above the level of the plain. It is essentially beneficent in its influences and effects. Countless thousands bless and laud the physician when by some discovery he adds to the storehouse of medical skill, and is thus able to further restrain the ravages of disease.

The physician does more real charitable and practical work at less compensation, than the members of any other profession. Somewhere in the future when rewards are distributed, I think possibly the physician will have one more jewel in his crown of rejoicing than the representative of any other avocation of this life.

Both the nation and the States have dealt wisely and progressively with the propositions of prevention and cure of disease. No session of a legislature passes without some statutory contribution intended to promote the general welfare. Congress is also equally devoted in its efforts to protect the people. Stringent, though merciful, enactments are enforced with absolute impartiality. The members of your celebrated profession are thus encouraged in their best efforts for the eradication of those scourges which threaten and destroy our homes.

The science of medicine and surgery has already accomplished much, but more will yet be done. The spirit of this century forbids stagnation.

The medical explorer will still bring to light new discoveries which will inure to the health and happiness of the people.

And now, gentlemen, permit me again, in behalf of this imperial commonwealth, to extend to you a most hearty and cordial welcome to the chief city of the Louisiana Purchase. Missouri is proud to welcome you as her guests. It is hardly necessary that I should say anything to you about Missouri, about her greatness and glory, the development of her resources, her splendid State government, and the fact that we are devoted to her. No other State furnishes the amount of zinc that we have in the southwest. Some of the richest iron and lead mines in the world are in the southeast. There are great counties which produce apples and peaches, and where we will yet have fifty millions of people. It is scarcely necessary to speak of Missouri's horticultural and agricultural resources, or of the manufacturing industries of her greatest city in which there is more wealth to-day than was possessed by the thirteen colonies a century ago. Yet proud as we are of this commonwealth, the contribution to the nation of the statesmanship of Thomas Jefferson, we are prouder still of being a State of the American Union. I speak as a Missourian but I exult still more in the fact that I am an American citizen. Our State is only one forty-fifth of this great American Republic, but if you do not believe what I tell you about Missouri's greatness go out and see what we have at the Exposition. Note the exhibits of New York and other States, and when you do I am sure you will agree that the Exposition now in progress surpasses all previous Expositions in the history of the world. It is twice as great as the Chicago Exposition, and six times greater than the Philadelphia Exposition, wonderful as people thought them to be. You will have before you the progress of the world. In this display of our country's resources we are justly proud that we are citizens of the mightiest republic known to history.

DR. WOODSON.—In view of the fact that Governor Dockery is not only the Governor of the State, but a member of the profession, I move that the Governor be made an honorary member of this Association for this occasion. Carried unanimously.

GOVERNOR DOCKERY.—I make my most grateful acknowledgment.

THE PRESIDENT.—The next speaker was expected to have been the Mayor of the city, the Hon. Rolla Wells. He has however been prevented from coming and has sent as his representative, Dr. Simon, President of the Board of Health of this city, whom I now have the honor to introduce to you.

DR. SIMON.—The Honorable Rolla Wells, Mayor of the city of St. Louis, being unable, much to his regret, to attend this meeting, has asked me to serve in his place. His Honor in making this selection was imbued

not with the idea that I could make an address adequate to the occasion, but rather that being the Health Commissioner of the city of St. Louis, I would take a deep interest in matters which will come before this Association, and this, indeed, I do.

I cannot hope to fill his place to your entire satisfaction, but shall be content to essay the rôle of what you gentlemen sometimes call the "psychic equivalent."

If it is true that in nature there is nothing great but man, and in man nothing great but mind, then of necessity this Congress of Psychologists is the most important and far-reaching of all the 300 or more conventions which are to be held in St. Louis during the World's Fair period.

We shall see gathered about us during the next few months men representing every line of human enterprise and every phase of human thought. Here at the greatest Exposition the world has ever seen will be heaped the treasures of the earth. Science will unfold here her most recent and most wonderful discoveries. Art will be there to dazzle the beholder with the magnificence and splendor of her work. Electricity, transportation, the varied industries, machinery, aeronautics, education, social economy, each of these will claim the attention of the visiting multitudes. The peoples of every race and clime, from the Eskimo in his furs to the South Sea Islander, transplanted bodily with all their environments will teach the lesson of universal brotherhood. But far above and beyond all this gorgeous panorama is that with which you are engaged, the mind of man. Others may deal with railroads or electricity, with painting or sculpture, with numberless human interests, each one in its own sphere, but you are dealing with that which created and evolved all these and without which they could not even have been conceived. Taken in its ultimate analysis, the World's Fair with all its accessories, animate and inanimate is a psychological event, it is the composite human brain of twenty centuries.

And yet this convention will come and go, and the true worth of the psychologists and alienists of this country will not be appreciated. The great questions, for example, of the prevention of crime, of responsibility and other questions so vital to our government, are scarcely heeded by the people. They do not realize what it is for the alienist to "fetter strong madness in a silken thread." The substitution of music and flowers for chains and dungeons has been so gradual as to be to most persons imperceptible; and I hope that one of the benefits accruing to humanity from this 60th Convention of the American Medico-Psychological Association will be the enlightenment of the public regarding the manner of caring for the insane as compared with the harsh methods of a few decades ago.

I am not here, however, to break in on affairs psychological, and you are undoubtedly anxious to proceed with your program. I have the honor, therefore, to bid you on the part of the city of St. Louis, a profoundly sincere welcome.

I speak the sentiment of every one of the 700,000 citizens of St. Louis when I say the city is yours to command. St. Louis has some times been called slow. She is slow in some things. She is slow to take offense from her sister cities. She is slow to grasp at every financial bauble the tempter holds out to her: That is why she is called the *solid* city. She is slow to open her portals for the departure of her guests once they have called. She is slow to fall into many of the ways of the East, because she is distinctly a Western city. She has laid off her buckskins and her holster, but she is slow to step into patent leathers and part her hair in the middle. She is, to use one of your own expressions, *in the borderland*. But she yields to no city in the world in hospitality. Those of you who have been in the West know what Western hospitality means; those of you who have not will carry home with you the memory of happy hours spent with women as fair and men as brave as America can produce.

Once more then Mr. President in conclusion, I bid you a warm, sturdy, Western welcome.

THE PRESIDENT.—The closing address of welcome will be made by the President of the Missouri State Medical Society, Dr. Wm. G. Moore, whom I have the honor to introduce.

DR. MOORE.—You have given me the pleasantest duty that I could possibly conceive on this or any other occasion, the duty of bidding the stranger welcome within our gates. Did I not know the medical profession as I do, I should feel my inadequacy in the presence of these people who deal entirely with the brain. You ladies and gentlemen, would intimidate me if I went back to the thought only that you deal with brains, brains, brains. There is a saving fact, however, in the belief that *all* the brains you deal with are not better than my own and my presence here is the result of my position in the State Medical Society. Only this and nothing more. We are in the welcoming business in St. Louis. We have welcomed everybody from every quarter of the known world. We have welcomed the Igorrotes, the head hunters, and now it is our supreme pleasure to welcome the head fixers. (Laughter.)

"Can'st thou not minister to a mind diseased? Pluck from the memory a rooted sorrow?" If you can, then I declare that since the Prince of men was on this earth no nobler mission has ever been given to those made in his image than yours. I could use words of welcome, until they would grow mountain high, but I believe that platitudes shall have no place in welcoming this Association which is, I learned this morning, the oldest National medical organization in America. In St. Louis or in any other city in the world you would be given a warm welcome. I thought this morning of the picture of Pinel at Salpêtrière removing the shackles from the insane. It was that picture which came to my mind when these gentlemen were good enough to ask me to fill this position. All of you have seen it. All appreciate it. All remember the lessons

taught by the artist's brush. The shackles are being removed from a typically mind-dethroned, reasonless woman and while the thoughtful quiet-faced Pinel who knew so much of what that meant, was engaged, a devoted nurse is kneeling and kissing the unheeding hands. From that day when the moral, humane treatment of the insane was inaugurated to this good hour, the followers of Pinel have constantly contributed to the welfare of humanity, have constantly broken away from the chains and fetters until now the place I used to dream of as a child as the most hideous corner of the earth has become really a garden for the cultivation of the remnants of human reason. Are you welcome when we recall these things? Thrice welcome.

On the other hand, gentlemen, I hope you will pardon me if I digress for a while in order to refer to Governor Dockery's address. In speaking of our wonderful progress he mentioned the surgical hospital. That is getting to be a chestnut, that surgical hospital. I want to recall the fact that medicine especially has done more for the benefit of the human race, has saved more lives, and will continue to save more lives by one thing alone than all the surgery, and that is by the use of diphtheria antitoxin. (Applause.) I notice that the ladies of various societies and clubs talk a good deal about "mere man." The ladies probably understand a good deal better than I do about "mere man." I am not a surgeon, I am a "mere" doctor. As Jonathan Hutchinson said, "I am a specialist on the skin and all that it contains." I am a mere doctor and I say in the presence of all the surgeons that can be assembled on the face of this earth if they will recall the fact that through the labors of medical men Asiatic cholera, diphtheria, small-pox, yellow fever, typhus fever, and all the great epidemics of the world have become but reminiscences, shadows of the past, and that this was brought about before Christian science, osteopathy, or any fads of this kind were born. Now, if I am touching on anybody's corns when I say Christian science, please pull your feet a little further backward. (Laughter.) Now then gentlemen, we are progressing toward the cure of tuberculosis, and if we accomplish that your surgeons will be tin horn artists in the rear of the great brass band procession of the world. (Laughter.) They have assumed everything. The surgeon wipes his knife in public, looks wise and looks fierce, and will tell you what he is going to do and often tells you what he can't do, and when there is a death from an operation, he says it was perfectly successful, but the technique was a little defective, perhaps the nurse didn't have clean hands.

Then there is another thing that I wish to bring to your attention as a physician and when I am in the presence of physicians, I feel that I am at home. I never appeared in the presence of such an assembly in my life that I did not feel that I should take you by the hand and say "You are my professional brethren." Another thing to which Governor Dockery referred is the doctor in politics, but until the doctor realizes that he has political power, you will never be able to know what the medical profession should have and would have just as sure as it is demanded. But

we have been such amiable fellows, working quietly, doing unremittingly for those that demanded our services, working for nothing, but sweet charity, we have neglected our rights. Until the medical profession of America is strongly organized (and much has been done toward this end in the last few years) until you rise to the full stature of your political strength, you will not know what a lion you are in the menagerie of men. Did you ever see a delegation to the legislature from a city? Did you ever hope for any reform, did you ever think they could not be bought when you looked into the faces of such fellows? If you did, you have optimism that I know nothing about. The most discouraging thing to my mind on the face of this earth is the sight of a delegation from a city. They are the wharf-rats, the saloon bums, the riff-raff, the scum, and now and then a man to keep up the respectability of the government. God made the country and man made the city. That is the explanation. You may hope for nothing in the way of reform that does not pay somebody something in the coin of the realm and I can say that if you do not use your vote you will wake up some morning to find Lydia Pinkham president of the United States. Now Lydia has been getting out a preparation especially recommended to ladies and gentlemen who want a fine complexion. The W. C. T. U., for whom I have the most profound regard, has been asked to co-operate in the exposure of the character of this beautifier. The Ladies Home Journal under the supervision of Edward Bok, (God bless him), brings out a list which you and I are permitted to study given by the Massachusetts State analyst which shows that about an ounce of a certain "remedy" will make a buck Indian walk on his tip toes, and why? Because it contains thirty per cent more or less real alcohol. Now the authorities of the Indian Territory, which some of you ladies and gentlemen would refer to as the wild and woolly west, prohibited the sale of the most wonderful remedy in the world. Know what it is? "Peruna." Why? Because the bucks all went on the warpath and their white brethren and the squaws did likewise.

Now as to another matter. When the armies had done their excellent work and were ordered home from Cuba and the Spaniard had withdrawn and left entrenched one enemy that could not be dislodged by revolver or bayonet, to menace the work, do you remember what happened? A company of five gentlemen, doctors, was marshalled quietly by the President and bidden to take all the authority and told to go down into that pest hole, Cuba, and find out what it was that caused yellow fever and how to eradicate it, with the result that the desert has been made to blossom as the rose. There is now no epidemic wave; there are sanitary conditions, and prosperity in the island. At what cost? A young man, Lazear by name, when it was proven that the infection of yellow fever could not be conveyed by contact alone, bared his arm and allowed a contaminated mosquito to bore into his tissues and infect him and poison him and kill him. If ever a more Christ-like thing were done on this earth than the sacrifice of this young man's life that others could live,

it is beyond my knowledge at this moment. (Applause.) Well may you applaud. Well may you applaud, and still I doubt if there are half a dozen in this room that know the names of the members of that commission which has done more for the world's benefit than all the armies that have ever been marshalled, or that ever will be marshalled in the history of the ages. The eradication of yellow fever will do more for the world than all the battles ever fought. Strange that when the President of the United States was forming the Panama commission in which sanitation plays so conspicuous a part, not one single doctor's name was mentioned or even suggested. Why? Because you have been playing the small fiddle so long that you are afraid to strike the cymbals. If you will demand what is due, you must be granted it. The politician is a wise soothsayer and prognostician and you let the pulse of the American medical profession be felt once by the politician and he will know exactly what the future of the case will be. The prognosis will be made at once and the treatment will be once accorded fairly to the greatest and most wondrous medical profession in the world, because already you have progressed beyond the empirical in dealing with stricken man.

If I could command words to give the welcome which I feel I should be glad indeed. The gates of the city are open to you, the doors of our homes are open to you, the hearts of our citizens are open to you, and we bid you enter and welcome. (Great applause.)

THE PRESIDENT.—There are certain contingencies when the desire of a body in meeting assembled is so apparent that it is not necessary to go through with the usual formalities of a motion and so assuming that there is no objection and that it is the desire of my audience that the gentlemen who have so eloquently and kindly addressed us should receive your thanks for their welcome, I proceed to convey them. And now, gentlemen, in behalf of the Association I give you heartiest thanks for your cordial words of welcome.

The Secretary made the following announcements:

That telegrams or letters of regret had been received from Drs. Carlos F. Macdonald, G. Alder Blumer, E. N. Brush, B. D. Evans, Michael Campbell, and R. H. Hutchings.

That a letter of condolence on the death of Dr. Richardson had been received from Dr. Spence of Burntwood near Litchfield, England.

That Dr. Wesley Mills had written thanking the Association for his election to honorary membership.

That Dr. Milligan had acknowledged the receipt of the resolution in respect to prison service renewed by the Association last year.

That Mrs. A. B. Richardson had written a warm letter of appreciation for the tender thought of her husband, for the letters and expressions of sympathy received, and for the floral tribute sent by the Association.

REPORT OF THE COUNCIL.

The Secretary read the following reports from the Council:

Pursuant to a provision of the Constitution that whenever vacancies occur in any of the offices of the Association, they shall be filled by the Council until the next annual meeting, the Council has elected Dr. A. E. Macdonald, President, to succeed Dr. A. B. Richardson, deceased; Dr. T. O. Powell, Vice-President, to succeed Dr. Macdonald; and Dr. C. R. Woodson, Councilor for *one year* to succeed Dr. E. C. Runge, deceased.

It was moved that the report be accepted and adopted and the action of the Council in the election of officers be approved. Carried unanimously.

THE SECRETARY.—The Council recommends that the Nominating Committee be instructed to nominate a delegate and alternate to the Executive Committee of the Congress of American Physicians and Surgeons.

On motion the report of the Council was accepted and adopted.

THE SECRETARY.—The Council recommends an appropriation of \$200 for the JOURNAL OF INSANITY for the fiscal year beginning May 1st, 1904.

On motion the report was accepted and adopted.

THE SECRETARY.—The Council recommends that dues for active members for the coming year be placed at \$5.00 and for associate members at \$2.00.

On motion the report was accepted and adopted.

The Secretary reported that the Council recommended the following for membership in the Association:

For Active Membership.—Maurice C. Ashley, M. D., Middletown, N. Y.; Albert Moore Barrett, M. D., Hathorne, Mass.; J. G. Furnish, M. D., Lakeland, Ky.; Richard H. Hutchings, M. D., Ogdensburg, N. Y.; G. H. Manchester, M. D., New Westminster, B. C.; Harry William Miller,

M. D., Taunton, Mass.; Flavius Packer, M. D., New York, N. Y.; Middleton L. Perry, M. D., Parsons, Kansas; Arthur F. Shepherd, M. D., Dayton, Ohio; Wm. A. Stoker, M. D., Evansville, Ind.; Geo. Stockton, M. D., Columbus, Ohio; Geo. H. Torney, Jr., M. D., Utica, N. Y.; Geo. T. Tuttle, M. D., Waverley, Mass.; M. Nelson Voldeng, M. D., Cherokee, Ia.; Wm. A. White, M. D., Washington, D. C.

For Associate Membership.—George Sheldon Adams, M. D., Yankton, S. Dak.; Joseph B. Betts, M. D., Buffalo, N. Y.; Benjamin W. Bohrer, M. D., Taunton, Mass.; Isabel A. Bradley, M. D., Columbus, Ohio.; Ida J. Brooks, M. D., Westboro, Mass.; Edson C. Brown, M. D., Massillon, Ohio; Mary Christiancy, M. D., Norristown, Pa.; Homer E. Clarke, M. D., Pontiac, Mich.; Earle E. Gaver, M. D., Columbus, Ohio; Harold C. Goodwin, M. D., Concord, N. H.; Geo. T. Harding, Jr., M. D., Columbus, Ohio.; Chas. L. Harmer, M. D., Massillon, Ohio.; D. E. Harris, M. D., Massillon, Ohio; Theodore A. Hoch, M. D., Worcester, Mass.; Clifford J. Huyck, M. D., Westboro, Mass.; Geo. H. Maxfield, M. D., Concord, N. H.; James M. McGeorge, M. D., Massillon, Ohio; John D. O'Brien, M. D., Massillon, Ohio; Wm. W. Richardson, M. D., Columbus, Ohio; Clarence J. Slocum, M. D., Pleasantville, Westchester, Co., N. Y.; Calvin B. West, M. D., Central Islip, N. Y.; J. W. Wherry M. D., Clarinda, Iowa; G. H. Williams, M. D., Columbus, Ohio.

The names thus submitted were placed on a ballot as required by the Constitution for action at a subsequent session.

TREASURER'S REPORT.

The following report was read by the Treasurer:

C. B. BURR, Treasurer, in account with the American Medico-Psychological Association.

DR.		DR.
May 1, 1903.	To Balance.....	\$1,315.64
May 1, 1904.	To Dues from Active Members.....	1,225.25
	To Dues from Associate Members.....	194.10
	To Interest	44.76
	To Sale of Transactions.....	11.75
	To Sale of Gummed Lists.....	1.00
	To Sale of Blackburn's Autopsies.....	1.63
	To Sale of Postage.....	20.00
CR.		CR.
May 1, 1904.	By Printing Transactions, Lists of Members, Reprints	\$ 844.90
	By Mailing Cases.....	19.50
	By Express on Reprints and Transactions	80.47

By Stationery, Miscellaneous Printing, Programs & Ballots	\$ 77.05
By Stenographer and Clerical Hire....	167.60
By Secretary's Expenses at Washington,	44.25
By Appropriation, AMERICAN JOURNAL OF INSANITY	200.00
By Postage	106.00
By Telegraphing	14.31
By Cuts for Papers.....	86.05
By Registry Cards	4.50
By Index Medicus	5.00
By Floral Design Dr. Richardson.....	25.00
By Portfolio	2.00
By Amount Newton M. Shaffer, Treas- urer, Apportionment, Printing Trans- actions of Congress	199.81
Balance to New Account:	
Genesee County Savings Bank, \$110.92	
First National Bank, Savings Ac- count	750.13
First National Bank, Commer- cial Account.....	76.64
	937.69
	<hr/>
	\$2,814.13 \$2,814.13

The reasons that the Association's expenses have not been met by the revenue during the last year are two:

1st. The cost of the proceedings of the Congress, taxed according to membership upon the different societies, for this Association amounted to \$199.81.

2nd. The transactions of this Association were a third larger than those of any previous year and correspondingly more expensive. Aside from their bulk also, the Association has been put to considerably increased expense on account of the large number of illustrations. It is thought that ordinarily the revenue from dues and other sources of income will be sufficient to meet current expenses and indeed leave a small surplus as has hitherto been the case during the years of my treasurership.

C. B. Burr, Treasurer.

THE PRESIDENT.—You have heard the report of the Treasurer. What is your pleasure regarding it? The Treasurer suggests that it be referred to the Auditor about to be elected. All in favor of this disposition of the matter, please say Aye. Carried.

THE PRESIDENT.—The chair appoints the following members to serve as Nominating Committee:

Dr. J. Percy Wade, of Catonsville, Md.

Dr. Wm. M. Edwards, of Kalamazoo, Mich.,

Dr. W. A. Gordon, of Winnebago, Wis.

A recess was then taken for the purpose of registration.

The following members were present during the whole or a portion of the meeting:

Allen, H. D., M. D., Milledgeville, Ga.

Ashley, Maurice C., M. D., Medical Superintendent State Homeopathic Hospital, Middletown, N. Y.

Bancroft, Chas. P., M. D., Superintendent New Hampshire State Hospital, Concord, N. H.

Beemer, Nelson H., M. D., Medical Superintendent Mimico Asylum for the Insane, Toronto, Ont.

Beutler, W. P., M. D., Superintendent Milwaukee Asylum for the Chronic Insane, Wauwatosa, Wis.

Burgess, T. J. W., M. D., Medical Superintendent Protestant Hospital for the Insane, Montreal, Que. (President-Elect.)

Burr, C. B., M. D., Medical Director Oak Grove Hospital, Flint, Mich. (Vice-President-Elect.)

Burrell, Dwight R., M. D., Resident Physician Brigham Hall, Canadaiqua, N. Y.

Calder, D. H., M. D., Assistant Physician, State Mental Hospital, Provo City, Utah. (Associate.)

Caples, Byron N., M. D., Superintendent Waukesha Springs Sanitarium, Waukesha, Wis.

Chaddock, Chas. G., M. D., Professor Nervous and Mental Diseases, St. Louis University, St. Louis, Mo.

Chamberlain, G. L., M. D., Medical Superintendent Upper Peninsula Hospital for the Insane, Newberry, Mich.

Clark, J. Clement, M. D., Superintendent Springfield State Hospital, Sykesville, Md.

Coe, Henry Waldo, M. D., Medical Director Crystal Springs, Portland, Ore.

Crandall, Geo. C., M. D., Professor Internal Medicine, St. Louis University, St. Louis, Mo.,

Crumbacker, W. P., M. D., Superintendent Independence State Hospital, Independence, Ia.

Dent, E. C., M. D., Medical Superintendent Manhattan State Hospital, West, Ward's Island, New York, N. Y. (Secretary.)

Dewey, Richard, M. D., Physician-in-Charge, Milwaukee Sanitarium, Wauwatosa, Wis.

Dill, D. M., M. D., Superintendent Essex County Hospital for the Insane, Newark, N. J.

Drewry, Wm. F., M. D., Superintendent Central State Hospital Petersburg, Va.

Edwards, Wm. M., M. D., Medical Superintendent, Michigan Asylum for the Insane, Kalamazoo, Mich.

Eyman, Henry C., M. D., Medical Superintendent, Massillon State Hospital, Massillon, O.

French, Edward, M. D., Superintendent Medfield Insane Asylum, Hard-
ing, Mass.

Fry, Frank R., M. D., Professor Diseases of the Nervous System, Medi-
cal Department Washington University, St. Louis, Mo.

Furnish, J. G., M. D., Superintendent Central Kentucky Asylum for the
Insane, Lakeland, Ky.

Gordon, W. A., M. D., Superintendent Northern Hospital for the Insane,
Winnebago, Wis.

Graves, Marvin L., M. D., Superintendent Southwestern Insane Asylum,
San Antonio, Texas.

Guthrie, L. V., M. D., Superintendent West Virginia Asylum, Hunting-
ton, W. Va.

Harmon, F. W., M. D., Superintendent Longview Hospital, Cincinnati,
Ohio.

Hill, Chas. G., M. D., Physician-in-Charge, Mt. Hope Retreat, Baltimore,
Md.

Hill, Gershom H., M. D., Formerly Superintendent Independence State
Hospital, Des Moines, Ia.

Hobbs, A. T., M. D., Medical Superintendent Homewood Sanitarium,
Guelph, Ont.

Houston, J. A., M. D., Superintendent Northampton Insane Hospital,
Northampton, Mass.

Howard, Adams B., M. D., Superintendent Cleveland State Hospital,
Cleveland, Ohio.

Hughes, Chas. H., M. D., Editor Alienist and Neurologist, 3857 Olive
St., St. Louis, Mo.

Hurd, Arthur W., M. D., Superintendent Buffalo State Hospital,
Buffalo, N. Y.

Kilbourne, Arthur F., M. D., Superintendent Rochester State Hospital,
Rochester, Minn.

Kunst, A. H., M. D., Superintendent West Virginia Hospital for the
Insane, Weston, W. Va.

Lane, Edward B., M. D., Superintendent Boston Insane Hospital, New
Dorchester, Mass.

Langdon, F. W., M. D., Medical Director Cincinnati Sanitarium, 5
Garfield Place, Cincinnati, Ohio.

Lewis, Joseph M., M. D., Formerly Superintendent Cleveland State Hos-
pital, Rose Bldg., Cleveland, Ohio.

Lyons, A. J., M. D., Superintendent Second Hospital for the Insane,
Spencer, W. Va.

Macdonald, A. E., M. D., Superintendent Manhattan State Hospital,
East, Ward's Island, N. Y. (President.)

MacPhail, Andrew, M. D., Pathologist Protestant Hospital for the Insane, Montreal, Que.

Mayer, Edward E., M. D., Neurologist Presbyterian Hospital, 524 Penn Ave., Pittsburg, Pa.

McBride, James H., M. D., Medical Director Southern California Sanitarium for Nervous Diseases, Pasadena, Cal.

Mead, L. C., M. D., Superintendent South Dakota Hospital for the Insane, Yankton, S. Dak.

Meredith, H. B., M. D., Superintendent State Hospital for the Insane, Danville, Pa.

Mitchell, Thos. J., M. D., Superintendent State Insane Hospital, Asylum, Miss.

Nichols, John H., M. D., Superintendent State Hospital, Tewksbury, Mass.

Noble, Alfred I., M. D., Assistant Superintendent Worcester Insane Hospital, Worcester, Mass.

Page, Chas. W., M. D., Medical Superintendent, Danvers Insane Hospital, Hathorne, Mass.

Palmer, H. L., M. D., Superintendent Utica State Hospital, Utica, N. Y.

Perry, Middleton L., M. D., Superintendent State Hospital for Epileptics, Parsons, Kans.

Pilgrim, Chas. W., M. D., Medical Superintendent Hudson River State Hospital, Poughkeepsie, N. Y.

Powell, Theophilus O., M. D., Superintendent Georgia State Sanitarium, Milledgeville, Ga.

Punton, John, M. D., Superintendent Private Sanitarium, Kansas City, Mo.

Redwine, J. S., M. D., Medical Superintendent Eastern Kentucky Asylum for the Insane, Lexington, Ky.

Riggs, C. Eugene, M. D., Professor of Nervous and Mental Diseases University of Minnesota, St. Paul, Minn.

Robinson, J. F., M. D., Superintendent State Hospital, No. 3, Nevada, Mo.

Rogers, Jos. G., M. D., Medical Superintendent Northern Indiana Hospital, Longcliff, Logansport, Ind.

Russell, Wm. L., M. D., Medical Inspector of Institutions for the Insane, State Commission in Lunacy, Albany, N. Y. (Associate.)

Scribner, Ernest V., M. D., Medical Superintendent Worcester Insane Asylum, Worcester, Mass.

Searl, Ernst V., M. D., Superintendent Fair Oaks Villa, Cuyahoga Falls, Ohio.

Sprague, Geo. P., M. D., Proprietor and Superintendent High Oak Senatorium, Lexington, Ky.

Smith, G. A., M. D., Superintendent Manhattan State Hospital at Central Islip, Central Islip, N. Y.

Smith, S. E., M. D., Medical Superintendent Eastern Indiana Hospital for the Insane, Richmond, Ind.

Stedman, Henry R., M. D., Medical Superintendent "Bournewood," Private Hospital for Mental Diseases; also Trustee Taunton Insane Hospital, Brookline, Mass.

Tomlinson, H. A., M. D., Superintendent St. Peter State Hospital, St. Peter, Minn.

Turner, Jno. A., M. D., Superintendent North Texas Hospital for the Insane, Terrell, Tex.

Tuttle, Geo. T., M. D., Medical Superintendent McLean Hospital, Waverley, Mass.

Voldeng, M. N., M. D., Superintendent Cherokee State Hospital, Cherokee, Ia.

Wade, J. Percy, M. D., Medical Superintendent Maryland Hospital for the Insane, Catonsville, Md.

Wagner, Chas. G., M. D., Superintendent Binghamton State Hospital, Binghamton, N. Y.

Wentworth, Lowell F., M. D., Deputy Executive Officer State Board of Insanity, 36 State House, Boston, Mass.

Wherry, J. W., M. D., Assistant Physician Clarinda State Hospital, Clarinda, Ia. (Associate.)

White, M. J., M. D., Medical Superintendent Milwaukee Hospital for the Insane, Wauwatosa, Wis.

Wilsey, O. J., M. D., Physician-in-Charge Long Island Home, Amityville, L. I., N. Y.

Witte, Max E., M. D., Superintendent Clarinda State Hospital, Clarinda, Ia.

Woodbury, Chas. E., M. D., Superintendent Massachusetts Hospital for Dipsomaniacs and Inebriates, Foxborough, Mass.

Woodson, C. R., M. D., Superintendent State Hospital No. 2, St. Joseph, Mo.

Work, Hubert, M. D., Superintendent Woodcroft Hospital, Pueblo, Colo.

Worsham, B. M., M. D., Superintendent State Insane Asylum, Austin, Tex.

Visitors and guests of the Association were as follows:

Allen, M. N., Esq., Commissioner Central Kentucky Asylum for the Insane, Louisville, Ky.

Applegate, C. F., M. D., Superintendent Mt. Pleasant State Hospital, Mt. Pleasant, Ia.

Braid, Milton, M. D., Superintendent Western Kentucky Asylum for the Insane, Hopkinsville, Ky.

Dockery, Hon. A. M., Governor of Missouri.

Guest, Jas. W., M. D., Member Board of Trustees, Central Kentucky Asylum for the Insane, Lakeland, Ky.

Hopkinson, Samuel W., Esq., Trustee, Danvers Insane Hospital, Bradford, Mass.

Keith, Frank L., M. D., Superintendent State Hospital No. 4, Farmington, Mo.

Laughlin, C. E., M. D., Medical Superintendent Southern Indiana Hospital for the Insane, Evansville, Ind.

Moore, Wm. G., M. D., President Missouri State Medical Society, St. Louis, Mo.

Rand, Mrs. A. L., Trustee Medfield Insane Asylum, Harding, Mass.

Simon, Jno. H., M. D., Health Commissioner, St. Louis, Mo.

Tiedmann, Ernest F., M. D., Professor of Pathology and Bacteriology Washington University, St. Louis, Mo.

Uhls, L. L., M. D., Superintendent Osawatomie State Hospital, Osawatomie, Kans.

Williams, Berthold A., M. D., Senior Resident Physician Cincinnati Sanitarium, Cincinnati, O.

The Association reconvened at 11.15. Dr. Powell, Vice-President, in the Chair.

The Presidential address by Dr. A. E. Macdonald was then delivered. (To be published in the AMERICAN JOURNAL OF INSANITY for October.)

DR. BURR.—I move that we give the President a vote of thanks for his address and express our appreciation of his courage in coming in spite of illness, and our great gratification that he is able to preside at this meeting.

Carried unanimously by a rising vote.

THE PRESIDENT.—I am extremely indebted to you and can only ask that you will regard these desultory notes somewhat in the light of despatches such as we read every day from another source, which have the standard head-line "Delayed in Transmission;" which are to be elaborated later; and for which you, like another deliberative body, will grant "leave to print."

Adjourned.

TUESDAY, MAY 31, 1904.

The meeting was called to order by the President at 10 a. m.

On motion of Dr. Edwards the Secretary was instructed to cast the ballot of the Association for the candidates recommended for membership yesterday by the Council.

The Secretary announced that the ballot had been cast and the candidates were declared duly elected.

The following report was received from the Nominating Committee:

The Nominating Committee respectfully recommends that the following gentlemen be elected to the several positions designated:

For President: Dr. T. J. W. Burgess, of Montreal, Que.

For Vice-President: Dr. C. B. Burr, of Flint, Mich.

For Secretary and Treasurer: Dr. E. C. Dent, of New York, N. Y.

For Councilors: Dr. B. D. Evans, of Morris Plains, N. J.

Dr. C. R. Woodson, of St. Joseph, Mo.

Dr. E. V. Scribner, of Worcester, Mass.

Dr. J. S. Turner, of Terrell, Tex.

For Auditors: Dr. A. B. Howard, of Cleveland, O.

Dr. A. F. Kilbourne, of Rochester, Minn.

Delegate to Congress of American Physicians and Surgeons,
Dr. E. A. Macdonald, of New York.

Alternate, Dr. E. N. Brush, of Towson, Md.

Respectfully submitted.

J. PERCY WADE,
WM. M. EDWARDS,
W. A. GORDON.

THE PRESIDENT.—You have heard the report of the Nominating Committee. What is your pleasure regarding it? It is within the province of the Association to order in what way the election shall be held.

On motion the Secretary was instructed to cast the ballot for the officers nominated and they were declared duly elected to the several positions.

DR. BURR.—It may be in order to announce that with the exception of the President and Vice-President, the officers elected, Secretary-Treasurer, Councilors, Auditors, and all others, take office immediately.

The annual address to the Association under the title of "A Review of the Growth of Knowledge of Relations of the Mind and Nervous System" was then read by Professor Chas. G. Chaddock, of St. Louis.

DR. C. G. HILL.—I move that the Association extend a vote of thanks to Dr. Chaddock for his very able address.

DR. BURR.—We have rediscovered this morning if not that there is indeed no new thing under the sun, that at least much of

the so-called new is old. The Association has listened in the past to many excellent addresses but I am sure to none with greater interest or appreciation than this of Dr. Chaddock. I most heartily support the motion of Dr. Hill.

The motion of Dr. Hill was carried by a rising vote.

THE PRESIDENT.—Professor Chaddock, I take great pleasure in extending the thanks of this Association to you for your address.

PAPERS.

The following papers were presented:

"Paranoia—Especially with Reference to its Definition and its So-Called Acute Form," Chas K. Mills, M. D., Philadelphia, Pa. Read by Title.

"A Medico-Legal Case of Well Poisoning—With a Plea for a Hospital Observation Law." Henry R. Stedman, M. D., Brookline, Mass.

"Two Border-Line Cases." C. Eugene Riggs, M. D., St. Paul, Minn.

"A Consideration of the General Conditions Associated with Insanity and Their Connotations, Statistically and Otherwise." H. A. Tomlinson, M. D., St. Peter, Minn.

"The Relative Importance of Predisposing and So-Called Exciting Causes in the Etiology of Mental Disease." Carlos F. Macdonald, M. D., New York, N. Y. Read by title.

The Secretary read the following report:

REPORT OF THE BOARD OF EDITORS OF THE AMERICAN JOURNAL OF INSANITY.

To the American Medico-Psychological Association.—Gentlemen.—In behalf of the Editorial Board of the AMERICAN JOURNAL OF INSANITY, I present herewith a statement of the operations of the Journal during the past year, together with vouchers, with the request that they be referred to the Auditors.

It will be noted that, owing to a falling off in advertising and an increase in the cost of production of the Journal, there is a temporary deficit of about \$60.00. This, however, is more than off-set by advertising which is due, and subscriptions also which are due the Journal. The issue of the Journal during the past year has been somewhat interfered with by local reasons in Baltimore. Our printing office has been burned out once, necessitating the resetting of a large portion of one number.

A second fire destroyed illustrations for another number and postponed its issue.

During the year the Editors have been confronted with a great excess of material, more especially in the form of scientific memoirs and papers of great value. To publish them it has been necessary to increase the size of the numbers very much beyond what has been deemed wise, and in several instances to publish papers in installments. The suggestion has been made that the Association should provide for the publication of one scientific memoir each year in the form of a by-volume or supplement to the Journal. During the past year three such papers have appeared in the Journal. One of them, that of Dr. Adolf Meyer, was a monograph of 68 pages; another, by Drs. Clark and Prout, will occupy about 74 pages. The paper of Dr. Folin has occupied 33 pages, and will require about as many more. I would urge that authority be given to the Board of Editors to provide for the publication of such monographs at a cost not to exceed a definite sum each year, this sum to be fixed by the Council annually, in accordance with the financial condition of the Association.

Very truly yours,

HENRY M. HURD, *Managing Editor.*

THE PRESIDENT.—If there is no objection, the report of the Editors of the AMERICAN JOURNAL OF INSANITY will be referred to the Auditing Committee elected this morning. The same disposition will be made of the report of the Treasurer which, owing to absence of those officers, could not be done yesterday.

Adjourned.

WEDNESDAY, JUNE 1, 1904.

The meeting was called to order by the President at 10 a. m.

The following papers were read:

"A Case of Sleep-Talking." D. R. Burrell, M. D., Canandaigua, N. Y.

"The Epileptic Child; its Treatment and Care." W. P. Spratling, M. D., Sonyea, N. Y. Read by title.

"Case of Malingery." Chas. G. Wagner, M. D., Binghamton, N. Y.

"The Need for Careful and Exhaustive Scientific Study of So-Called Mental Epilepsy." Dwight S. Moore, M. D., Jamestown, N. Dak. Read by title.

"The Mental Conditions Occurring in Cretinism." Edward E. Mayer, M. D., Pittsburg, Pa.

"Organic Dementia with Abstract of Fifty-Eight Cases." J. M. Keniston, M. D., Hartford, Conn. Read by title.

"Are the Insane Responsible for Criminal Acts." John Punton, M. D., Kansas City, Mo. Discussed by Drs. Geo. P. Sprague, H. A. Tomlinson, Richard Dewey, Chas. C. Wagner, A. E. Macdonald, Chas. H. Hughes, F. W. Langdon, and by Dr. Punton in closing

DR. LANGDON.—One thing impressed me in regard to this admirable paper on a subject which has not received the attention which it deserves and that is that we should take some action formulating the conclusions of this body on this important subject. I would suggest that a set of resolutions be framed so as to embody them and that they be brought before the legal profession. I would move the appointment of a Committee to frame them and I would also move that Dr. Punton be made Chairman of that Committee.

Motion adopted.

The following papers were read:

"Intra-Cranial Tumors in the Insane, with a Report of Two Cases." I. H. Neff, M. D., Pontiac, Mich. Read by title.

"Hydrotherapy." Geo. T. Tuttle, M. D., Waverley, Mass.

"A Remarkable Case of Degenerative Insanity of the Moral Type." Henry R. Stedman, Brookline, Mass.

Adjourned.

THURSDAY, JUNE 2, 1904.

The Association was called to order by President Macdonald at 10 a. m.

The Council reported that Dr. Henry M. Hurd had offered his resignation from the editorial staff of the AMERICAN JOURNAL OF INSANITY; that it had tendered him the position of advisory editor, and that he had accepted such position.

The President announced the appointments of Dr. Richard Dewey, Dr. Nelson H. Beemer, and Dr. J. C. Clark, as the Committee on Resolutions.

REPORT OF AUDITING COMMITTEE.

Dr. A. B. Howard for the Auditing Committee presented the following report:

The Auditing Committee would report that it has examined the books and vouchers of the Treasurer and of the Editors of the *AMERICAN JOURNAL OF INSANITY* and has found them correct.

A. B. HOWARD,
A. F. KILBOURNE,

Auditors.

On motion the report was accepted and placed on file.

The following papers were read:

"A Case of Hysteria with Unusual Symptom Complex." (Loss of Identity, Reversed Writing, Homosexuality, Migraine, and Systematized Delusions.) Richard Dewey, M. D., Wauwatosa, Wis.

Dr. Dewey prefaced his paper by the following remarks:

The case which I am going to present to you this morning is one which is in an incomplete condition, the patient being still far from recovered but having features of a somewhat unusual character, I believed that it might be of interest to give some of the clinical facts of the case.

"The Mental Results of Abdomino-Pelvic Operations in Insane Women." W. P. Manton, M. D., Detroit, Mich. Read by title.

"Reconciliation of the Disparity between Hospital and Asylum Trained Nurses." C. P. Bancroft, M. D., Concord, N. H. Discussed by Drs. Tomlinson, Hughes, Kilbourne, and by Dr. Bancroft in closing.

"A Review of the Recoveries of the St. Lawrence State Hospital in the Year, 1894." R. H. Hutchings, M. D., Ogdensburg, N. Y. Read by title.

"A Few Remarks about Observation Hospitals and Wards." E. Stanley Abbot, M. D., Waverley, Mass. Read by Geo. T. Tuttle, M. D., Waverley, Mass.

"The German Psychiatric Clinics." E. N. Brush, M. D., Towson, Md. Read by title.

"Extension of Tent Treatment to Additional Classes of the Insane." C. Floyd Haviland, M. D., and Chester Lee Carlisle, M. D., Ward's Island, N. Y. Read by Wm. L. Russell, M. D., Inspector, for the Commission in Lunacy, Albany, N. Y. Discussed by Drs. C. B. Burr, J. C. Clark, the President and Dr. C. H. Hughes.

"A Plea for the Voluntary Admission of Certain Types of Insanity in Institutions for the Insane." James Russell, M. D. Hamilton, Ont. Read by title.

The Variations of the Psychic Equivalent." F. Savary Pearce, M. D., Philadelphia, Pa. Read by title.

"Suicide and Insanity." Gershom H. Hill, M. D., Des Moines, Ia. Read by title.

"Notes on Hallucinations." Wm. A. White, M. D., Washington, D. C. Read by title.

"Review of Some of the Recent Blood Stains with Demonstrations." (Demonstration by tests and microscopic slides.) Geo. C. Crandall, M. D., St. Louis, Mo. Discussed by Drs. C. H. Hughes and C. B. Burr.

"Amnesia Clinically and Diagnostically Considered." Chas. H. Hughes, M. D., St. Louis, Mo.

"Characteristics of the Scotch Lunacy System." Owen Copp, M. D., Boston, Mass. Read by title.

FRIDAY, JUNE 3, 1904.

The meeting was called to order by the President at 10 a. m.

THE PRESIDENT.—I call for the Report of the Council as to time and place of next meeting.

THE SECRETARY.—The Council has to report that it has selected San Antonio, Texas, as the place of the next meeting, the time to be between the 15th of April and the first of June. The Committee of Arrangements consisting of Dr. Jno. S. Turner, Dr. B. M. Worsham, and Dr. M. L. Graves, is to decide upon the exact time.

THE PRESIDENT.—Dr. Edwards, who was chosen as delegate to the meeting of the British Medico-Psychological Association last year, will please make his report.

DR. EDWARDS.—Through the great courtesy of this Association I was sent as delegate to the British Medico-Psychological Association at its meeting in London last year. I arrived in London in due time, as I expected, a week before the meeting. However, I found that the officers of the British Medico-Psychological Association exercise the same prerogatives that those of this Association do, namely that the Secretary changes the time of meeting.

This had been done so that the meeting closed upon the day of my arrival in London. I visited Dr. Jones at Claybury and I bear his greetings to our President and the members of this Association. I visited a number of institutions in England and Scotland and from their superintendents bring the very best wishes for the success of this meeting.

On motion the report was accepted and placed on file.

THE PRESIDENT.—I call for the report of the Committee on Resolutions.

DR. DEWEY.—Mr. President, members of the Association. Your Committee on Resolutions desire to express their appreciation of the comfortable and convenient arrangements for our sessions and the hospitality shown so far as opportunity was possible in view of the paramount attractions of the World's Fair.

RICHARD DEWEY,
N. H. BEEMER,
J. C. CLARK.

The report was accepted and adopted.

DR. BURR.—I would move that Dr. Jas. Russel of Hamilton, Ont., be elected a delegate to represent the Association this year at the meeting of the British Medico-Psychological Association.

The motion prevailed.

DR. PUNTON.—In regard to the Committee so kindly suggested by Dr. Langdon to prepare resolutions on the substance of my paper, I would be very glad to be relieved of the chairmanship of that Committee with your consent.

THE PRESIDENT.—You have heard the request of Dr. Punton to be relieved from the chairmanship of this committee. A motion is in order that the matter be reconsidered in accordance with his request.

DR. BURR.—I move that the resolutions of yesterday be reconsidered, and that Dr. Punton's request be complied with.

Motion carried.

DR. BURR.—I move that the appointment of this Committee be left with the President.

Motion carried.

THE PRESIDENT.—I understand that this is left with the incoming President.

DR. COE.—I wish to say, as most of you know, that Portland, Oregon, was an applicant for the next meeting place of the American Medico-Psychological Association but that we are glad that it is going to San Antonio. I wish to thank you for the kind word which many of you have spoken to me regarding Portland and to say that so long as you are going so far west, you might as well get your tickets through to Portland and I shall be glad to entertain you personally. We will show you a great country, with great forests, and mountains and rivers, and scenery that is unsurpassed. We will have also the Lewis and Clark Exposition which while it will not compare with the Louisiana Purchase Exposition will be a notable event and worth seeing. I assure you that I shall be glad to see you there and will do what I can for you if you will let me. (Applause.)

THE PRESIDENT.—The Association thanks Dr. Coe for his invitation.

DR. GRAVES.—I wish to thank the Association for the selection of San Antonio as the next meeting place and I desire to say to you that we will do everything in our power to make your stay there pleasant.

Memorial notices were then read by title as follows :

Geo. W. Foster, M. D., by I. W. Blackburn, M. D.

A. B. Richardson, M. D., by Henry A. Tobey, M. D.

Orpheus Everts, M. D., by F. W. Langdon, M. D.

John B. Murphy, M. D., by R. W. Bruce Smith, M. D.

Edward C. Runge, M. D., by Frank R. Fry, M. D.

Eli E. Josselyn, M. D., by E. N. Brush, M. D.

THE PRESIDENT.—Nothing remains for me now other than to vacate my office. I appoint Dr. Tuttle and Dr. Mead to conduct Dr. Burgess to the Chair.

PRESIDENT MACDONALD.—Members of the Association: It gives me very great pleasure to introduce to you my successor and your President for the coming year. Dr. Burgess, I wish you in your new office happiness and success, which I also predict, and I no less predict satisfaction and pleasure to this Association under your Presidency.

DR. BURGESS.—I am indebted to you for the greatness thrust upon me. I only wish that I were more worthy of it and that I could find words to express the gratitude I feel for the honor the

Association has conferred upon me. I cannot hope to equal my predecessors all of whom have been men whose names are well known in psychiatry, but I promise that I will do my best in fulfilling the duties to the satisfaction of the Association, and in making the San Antonio meeting as successful as those in the past. I thank you indeed most heartily for the honor you have conferred upon me.

PRESIDENT MACDONALD.—I ask the Association's indulgence for a violation of the rules in returning to the office of President for a moment and beg to upset another precedent which has, so the retiring Secretary tells me, been followed for a great many years. He tells me that it is not proper to introduce the Vice-President but I am going to do so in spite of his protest. Dr. Burr needs no introduction. He has as Secretary found his way to the desk so often that we began to wonder if he could ever find his way away from it. He needs nobody to conduct him. Will Dr. Burr please come to the platform?

DR. BURR.—I appreciate this honor very much. I have enjoyed the work of Secretary which you have placed upon me for several years and retire from the office with some regret. It would be with unmixed regret except for the fact that after routine has been carried on for years, things begin to grind a little, and to grow a wee bit irksome. I have enjoyed the work in the main and have attempted to carry it on in a way which would merit your approval. I retire from the office gratefully appreciative of the confidence which you have placed in me for so many years and shall seek to serve you well in the honorable office to which you have elected me. I shall hope to see you all the next year, shall hope that there will be a large attendance at San Antonio. The members from Texas have expressed a great desire for us to go there and extend to us the old time Southern hospitality. I hope every member will strain a point to go. I thank you heartily for this new expression of your confidence. (Applause.)

DR. PILGRIM.—Before adjournment, I move that a vote of thanks be extended to Dr. Macdonald for the very able manner in which he has conducted this meeting.

DR. BURGESS.—You have heard the motion to thank the retiring, President, Dr. Macdonald. Thanks are especially due him in

view of the fact that suffering from ill health he has come here and contributed his large part to this successful meeting.

Carried unanimously.

DR. BURGESS.—On behalf of the Association, I extend to you with much pleasure this vote of thanks.

Gentlemen.—There being no further business to come before this Association to-day, I declare the meeting adjourned until we gather together at San Antonio. I only hope, as Dr. Burr has said that there will be a large meeting there. I am sure you will be heartily welcomed. You have heard of a Virginia welcome, and I am sure that you will find a Texas welcome equal to it at the coming meeting and if we go there, we will have a very, very good time. The meeting now stands adjourned.

E. C. DENT, *Secretary*.

ASSOCIATION OF ASSISTANT PHYSICIANS OF THE OHIO STATE HOSPITALS.

Proceedings of the Third Meeting.

The third meeting of the Association of Assistant Physicians of the Ohio State Hospitals was held on April 6 and 7 in the Pathological Laboratory of the Ohio Hospital for Epileptics at Gallipolis, Ohio.

AFTERNOON SESSION, APRIL 6.

President's annual address, Dr. G. T. Harding, Jr., Columbus. Subject: "The Reasons for the Existence of the Association of Assistant Physicians, and Its Policy." In his address Dr. Harding took occasion to protest strongly against a niggardly economy to the detriment of the best medical work in these institutions. Discussion by Gen. Roeliff Brinkerhoff and Mr. Shirer, of the Ohio Board of State Charities, guests of the Association, and by Drs. W. H. Pritchard, N. H. Young and G. T. Harding, Jr.

Dr. J. O'Brien discussed two cases of pre-senile delusional insanity observed by him at the Massillon State Hospital and at the McLean Hospital.

Dr. Ralph W. Holmes, Gallipolis, presented the specimens

from a case of epilepsy following scarlet fever, in which the accessory sinuses on the left side were found at autopsy enormously enlarged and the left half of the cerebrum was destroyed in large part. Here the aphasia following the disease gradually subsided and speech was regained while the patient became left-handed.

Dr. E. B. Morrison, Gallipolis, exhibited an epileptic patient with facial hemiatrophy.

Dr. Wm. H. Pritchard, Gallipolis, gave the clinical history and presented the pathological specimens from a case of paradoxical embolism due to a persistent foramen ovale.

Dr. Walter H. Buhlig, Gallipolis, presented an epileptic with astasia-abasia.

Dr. Arthur G. Helmick, Gallipolis, read the clinical history and showed the specimens from an epileptic who died from measles and laryngeal diphtheria.

Paper, "The Surgical Treatment of the Insane," by Dr. George R. Love, Toledo, read by title.

Dr. Paul W. Tappan, Dayton, read a paper entitled "Entertainment and Amusement for the Insane." Discussion by Drs. N. H. Young, R. W. Holmes, E. E. Gaver, G. T. Harding, Jr., and Tappan.

EVENING SESSION, APRIL 6.

Dr. Earl E. Gaver, Columbus, read a paper entitled "Changes Needed in the Ohio Lunacy Laws." Discussion by Dr. R. W. Holmes, Mr. Shirer, Drs. Morrison, Young and Gaver.

Dr. F. D. Ferneau, Toledo, read a paper on "Tuberculosis in the Insane." Inasmuch as this is a paper now being debated by the medical profession and the legislative bodies of Ohio, and as it concerns directly the treatment of the tuberculous patients in the various State hospitals, it was freely and intelligently discussed by the members of the Association.

MORNING SESSION, APRIL 7.

Dr. Edson C. Brown, Massillon, read a paper entitled "Paranoia." Discussion by Drs. Tappan, Bradley and Brown.

Dr. A. P. Ohlmacher, Gallipolis, presented and discussed the pathological specimens in "A Case of Aquatic Sudden Death of Status Lymphaticus in an Epileptic."

Following the completion of the program, the business of the Association was transacted. After reports of committees had been heard, the Association proceeded to the election of officers, which resulted as follows: President, Dr. Wm. H. Pritchard, Gallipolis; Vice-President, Dr. Paul W. Tappan, Dayton; Secretary, Dr. Walter H. Buhlig, Gallipolis; Treasurer, Dr. F. D. Ferneau, Toledo.

As a result of the discussion of Dr. Gaver's paper on needed reforms in Ohio's lunacy laws, the legislative committee was charged with making a study of these laws in order to bring up for consideration at a future meeting such changes as seemed needed.

Dr. Ralph W. Holmes, Gallipolis, Dr. James F. Kelley, Cleveland, and Dr. Mylo Wilson, Athens, were appointed by the President to represent the interests of the Association at the meeting of the Ohio State Medical Association to be held at Cleveland.

WALTER H. BUHLIG, *Secretary*.

Obituary

Dr. John B. Murphy, the Medical Superintendent of the Brockville Asylum at Brockville, Ontario, died very suddenly of heart disease at his residence, January 17, 1904. He was returning from church when stricken with disease and lived but a few minutes.

The late John Bernard Murphy was born in the township of Asphodel in the county of Peterborough on the 31st of March, 1850. His father was a native of Ireland, and was a man of splendid physique and exceptional integrity, honored and respected by all his acquaintances. The subject of this obituary notice attended the public school in his own township, and afterwards the old Norwood Grammar School, one of the best institutions of its kind in the district. He subsequently attended St. Michael's College, in Toronto, and while there he had the opportunity of becoming acquainted with some of Canada's future distinguished citizens, whose friendship and affection he retained until his death. After graduating there, he returned home and for the next few years he taught school with marked success. In 1872 he began the study of medicine at Queen's University, Kingston, graduating in 1876. He began the practice of medicine in Belleville, and in 1881 was appointed physician to the Deaf and Dumb Institute, at the same time retaining his general practice. He was a most successful practitioner, and had a large consulting practice throughout the district in which he resided, and even to this day he is not forgotten there. His professional skill, kindly sympathy, and unfailing courtesy endeared him to the afflicted who applied to him for assistance, and his departure from Belleville was sincerely regretted by everyone who knew him. In 1890 he was appointed Medical Superintendent of the Asylum for the Insane at Mimico, near Toronto. The writer happened to be in his office in Belleville a short time before his

departure to assume his new duties, and had an opportunity of seeing many of his old patients call to bid him good-bye with the most marked external manifestations of the great grief experienced at the loss of so warm a personal friend.

While at Mimico, Dr. Murphy labored zealously and successfully on behalf of the people placed under his care. The grounds were improved and everything was placed in good running order, when, in 1894, he was asked to assume similar duties in the new asylum at Brockville, which was just completed. While many a man might have hesitated to accept this new and difficult position, Dr. Murphy, whatever he may have felt, made no complaint. His appointment, however, was perhaps the greatest compliment that could have been paid to him. It was an eloquent testimony of the confidence reposed in him by the government of the province.

In his new position Dr. Murphy labored as zealously as ever. New buildings were added from year to year, grounds were improved, roads and walks constructed, until at the time of his death he was in charge of one of the best equipped and most successfully managed institutions in the province.

Dr. Murphy was in the zenith of his manhood, and while he has left behind him a public record of which any man might well be proud, yet his friends, those who knew him best, will remember him most for his qualities of head and heart. He was a warm-hearted, honest man, sincere in his friendship, generous in his judgments, and always straightforward in his dealings. He was faithful, modest and kind-hearted, and zealously devoted to the welfare of the unfortunates committed to his care. He cared nothing for the applause of the public, nor could public criticism deter him from doing what he believed to be right.

His domestic relations were of the happiest nature, and a devoted, affectionate and helpful wife and a family of six children now mourns the loss of a loving husband and father.

"The battle of life is brief,
The alarm, the struggle, the relief,
Then sleep we side by side."

T. J. MOHER.

Notes and Comment

THE ST. LOUIS MEETING.—This year St. Louis seems to be the Mecca of medical associations. Among those braving the discomforts of crowded hotels and variable weather, the American Medico-Psychological Association met in the city of the Louisiana Purchase Exposition, May 30th to June 3rd. The meeting was excellent in point of papers read and better than was hoped as to attendance, but notwithstanding the favorable arrangements of the local committee to have morning sessions only, thus permitting members to enjoy the Exposition during afternoons and evenings, the environment was such as to interfere with the continuity of the work, and especially with the thorough discussion of papers. One was vividly reminded of a similar experience during the time of the World's Fair when the Association met in Chicago in 1893. The absence of several of the older members and wheel-horses of the Association who were deterred from coming because they could not visit St. Louis at this meeting and again in September at the time of the Medical Congress was noticed and regretted.

No less than fourteen papers were read by title somewhat to the impairment of the program. In every instance there seemed to have been good and valid reason for the non-attendance of the author, but the fact remains that lack of attendance on the part of those who have promised papers strongly tends to throw the work of any association out of joint.

Notwithstanding these handicaps, however, the meeting was successful and stimulating. Dr. Macdonald showed himself a masterful, resourceful, and conscientious presiding officer and kept things actively moving. Coming from a sick bed to preside and carrying the work by sheer fortitude and will in the face of the ineptitude which illness brings, merited and received unstinted praise. Dr. Dent, the newly elected secretary, assumed the position gracefully and easily and took up its duties with a

characteristic fidelity which gives promise of a healthy growth of the Association and an excellent program for next year.

As an outgrowth of the discussion of Dr. Punton's paper, "Are the Insane Responsible for Criminal Acts," a Committee was appointed to frame the conclusions of the Association on the subject in a set of resolutions that may eventually be brought to the attention of the legal profession.

The annual address of Dr. Chas. G. Chaddock was a scholarly production and showed deep reading and research. It is very much to be regretted that its publication may be delayed owing to the failure of the express company to deliver a package containing this and a number of other manuscripts and some of the books and records of the Association which was shipped late in June but had not been received by Dr. Dent up to the middle of July. Authors of papers must possess their souls with patience. It seems impossible under the circumstances of the shipment, that such a package should much longer remain undelivered.

The Association received urgent invitations to meet at Providence, R. I., Portland, Ore., and San Antonio, Tex. The special claim advanced for San Antonio was that the Association had never met so far south and that its presence was needed as an incentive and inspiration to that section of the United States. The Council decided upon San Antonio for the 1905 meeting and has left the date to be settled upon by the local Committee.

B.

PSYCHIATRY IN THE INTERNATIONAL CONGRESS OF ARTS AND SCIENCES AT ST. LOUIS.—The announcement is made that the Section in Psychiatry of the Congress will be presided over by Dr. Edward Cowles of Boston. The formal addresses in addition to that of Dr. Cowles will be delivered by Prof. Th. Ziehen of Berlin and Dr. Charles L. Dana of New York. The names of those who are to give the shorter addresses have not yet been announced. The idea of the Congress grew out of the conviction that the subdivisions and multiplication of specialties in science had reached a stage at which investigators and scholars might derive inspiration and profit from a general survey of the various fields of learning, planned with a view of bringing the scattered sciences into closer mutual relations. An assemblage is conse-

quently to be convened at which leading representatives of theoretical and applied sciences are to set forth the general principles and fundamental conceptions which connect groups of sciences, to show their mutual relations and to discuss their present problems. The speakers to treat the various themes have been selected in advance from Europe and America. The sessions have been arranged on the following general plan:

After the opening of the Congress on Monday afternoon, September 19, addresses on the seven main divisions of science will follow on Tuesday forenoon, with the intention of unifying as far as practicable these divisions. These are to be followed by two addresses relating to each one of the twenty-four great departments of knowledge. One address in each case will treat of fundamental conceptions and methods, and the second will set forth the progress which has been made during the nineteenth century. These and the preceding addresses will be given by American scholars.

Upon the third day with the opening of the sections the international character of the Congress will be apparent. About 128 sectional meetings will be held on the four succeeding days of the Congress, at each of which two papers will be read, the first relating to the connections of the special branch to other branches and the second to its present problems. The addresses in each department are to be collected and published in a special volume.

DR. T. J. W. BURGESS.—The recently elected president of the American Medico-Psychological Association, Dr. Thomas Joseph Workman Burgess, the second son of the late Thomas Burgess, a native of Carlisle, Cumberland, England, was born in Toronto, Ontario, March 11, 1849. He was educated at Upper Canada College, where he gained a scholarship and numerous prizes in a variety of subjects. Matriculating in medicine at the University of Toronto in 1866, he graduated therefrom in 1870, carrying off the Starr gold medal and first University silver medal.

Commencing professional work, he was associated with the Toronto Asylum as clinical assistant under his godfather, the late venerable Dr. Joseph Workman, then superintendent of that institution.

In 1872 he was attached to the Royal Engineers and appointed surgeon to the Royal Commission for the demarcation of the

international boundary line between Canada and the United States from the Lake of the Woods to the Rocky Mountains, and at the close of the work received the thanks of her Majesty's government for the able manner in which he had carried out the arduous duties entrusted to him.

Returning to Toronto, he resumed his special work in connection with mental disease, and in 1875 became assistant physician, then assistant superintendent, of the London Asylum, serving as such under the late Drs. Henry Landor and R. M. Bucke. In 1887, he was transferred to the Hamilton Asylum, where he remained until 1890, when the governors of the then newly erected Protestant Hospital for the Insane at Verdun near Montreal unanimously selected him, from a large number of applicants, as its first medical superintendent, which appointment was confirmed by the Provincial government.

In 1893, Dr. Burgess was appointed lecturer on, and in 1889 professor of, Mental Diseases at McGill University. He is a fellow of the Royal Society of Canada, serving as president of the Biological Section thereof in 1898, and is also a fellow of the American Association for the Advancement of Science.

Dr. Burgess has gained considerable repute as a botanist and contributed several valuable papers on the subject to the technical press. Of late years, however, his attention has been given almost exclusively to psychology.

The readers of the *AMERICAN JOURNAL OF INSANITY* will remember the excellent account of the Canadian institutions for the insane which appeared in its pages in 1898 from the pen of Dr. Burgess. It is to be regretted that he has not written more frequently. Dr. Burgess is a man of varied culture and of broad scientific requirements. He is also an excellent organizer and a very efficient medical officer.

His work at Verdun has been accomplished under many disadvantages and discouragements, but its success has been far beyond what even his most sanguine friends anticipated. His selection to be president of the American Medico-Psychological Association is a well deserved tribute to his worth.

Abstracts and Extracts

Étude sur le Mélancholie. Par SOUKHANOFF et GANNOUCHKINE. Annales Médico-Psychologiques, LXI, p. 209, September-October 1903.

The authors have studied 278 cases (102 men, 176 women) in the Psychiatric Clinic of Moscow. They disagree with Kraepelin, who limits the term melancholia to the regressive period of life, and discuss the question of recurrence at some length. They state that all the acute psychoses, whatever their clinical form, have a marked tendency to recur, and further, in any acute psychosis, and especially in melancholia, it is impossible to state positively that the disease will not recur. Melancholia occurs more frequently in women than in men, 12 per cent in women, 3.4 per cent in men. Heredity is less important as an etiological factor in women than in men.

The conclusions to this study are:

1. Melancholia, like all acute psychoses, may recur after long or short intervals.
2. There is not sufficient evidence to consider periodic melancholia as a morbid entity, because this form coincides with recurrent melancholia with frequent attacks.
3. In certain cases of recurrent melancholia, intellectual weakness or even dementia, may occur after an attack, but this does not exclude the diagnosis of recurrent melancholia and indicates the possibility of transitional cases between dementia præcox and the recurrent psychoses.
4. When in certain cases melancholia develops on a constitutional basis (hysteric, alcoholic, morbid obsessions, eccentric), it is apt to partake of the characteristics of this constitutional basis.
5. The state of melancholia appearing as a phase of a circular insanity should not be considered as an acute psychosis, as circular insanity is due to entirely different causes than acute recurrent psychoses.

W. R. D.

Fréquence et évolution des lésions du fond de l'oeil dans la paralysie générale. Étude clinique et anatomo-pathologique. Jar. M. M. P. RAVIART et P. CAUDRON. Journal de Neurologie, An. 9, p. 54, February 5, 1904.

This paper is complementary to previous publications by the authors themselves and with M. Keraval (see this JOURNAL, Vol. 59, p. 693). Twenty-three cases of the first series reported have been examined and in a general way the ocular changes have developed parallel with the brain

lesions. Exceptions were seen in two patients who had become blind before reaching the third stage. The second series consisted of 44 patients of whom 38 showed some change in the fundus. These were bilateral white atrophy of the papilla in one; bleaching of both papillæ in ten, bleaching of the right papilla in two, the left eye being normal in one, while the left papilla of the other showed paleness of the nasal segment; in four cases the papilla was grayish-white; the papillæ of five others were pale, the vessels tortuous, one patient showed a pale right papilla while the left was normal; eleven cases showed a paleness of both papillæ, the right alone being affected in four others, and the left alone in one other.

Five cases came to autopsy. The retina showed proliferation of neuroglia, connective tissue and the radiating fibers. In advanced cases the ganglion cells had disappeared. A serious retinitis sometimes accompanied the diffuse retinitis, and the cystic degeneration described by Iwanoff was also observed. The papilla showed infiltration with neuroglia and connective tissue, varying with the degree of the lesion and atrophy. The optic nerve showed similar lesions.

W. R. D.

De la réaction pupillaire prolongée aux toxiques comme signe précoce de la paralysie générale. By M. M. ED. TOULOUSE et CL. VURPAS. Journal de Neurologie, An. 9, p. 52, February 5, 1904.

The authors have studied the action of eserine and atropine on the iris to see if it did not furnish an early sign for the diagnosis of beginning paresis. They have noted *the latent period* during which there was no reaction; *the period of reaction* in which the dilation from atropine or contraction from eserine attained the maximum; *the total length of the reaction*, or the entire time of modification of the pupil. One drop of the solution was placed in one eye, the other being used for comparison, and the patients were observed from hour to hour. The length of the reaction is always longer in paretics in a ratio of about 3 to 1. The authors believe that this prolonged time is due to alterations of the higher nerve centers of the cerebral cortex and that it constitutes a valuable early diagnostic sign.

W. R. D.

On the Action of the Blood Serum from Cases of Acute Mental Disorder on B. Coli Communis. By ALICE V. JOHNSON and EDWIN GOODALL. (British Medical Journal, No. 2258, p. 826, April 9, 1904.)

A preliminary communication on this work was made at the last meeting of the British Medical Association. Further experiments have been made, and the following conclusions are drawn:

1. In 50 per cent of the total cases of acute insanity agglutination was present, in contrast to the control experiments, where only 15.5 per cent of the cases presented this phenomenon.

2. Such agglutination was partial in the great majority of the cases (39 per cent).

3. In those forms of the disease in which the cases were sufficiently numerous to permit of percentages being taken (mania and melancholia), a preponderance of partial over good agglutination was also obvious.

4. The percentage of agglutination (good and partial) was greater (58.5 per cent) in the cases of melancholia than in those of mania (45.2 per cent).

5. The percentage of good agglutination was greater in melancholia than in mania.

6. Even when the disease is quite recent in duration there is as often as not a failure to agglutinate.

Epilepsie, Pathogénie et indications thérapeutiques (Contribution à l'étude de la Physiologie du corps thyroïde). DR. ALEX. PARIS, Arch. Neurol. Vol. XVII, p. 97, and 206, Février et Mars, 1904.

In the treatment of epilepsy the end to be attained is to first diminish the cerebro-spinal excitability; secondly, to moderate the functional activity of the thyroid gland more especially, and also that of the genital glands; thirdly to assure the regular elimination of their secretions and prevent their retention in the organism; fourthly, to prevent all the complementary causes of cerebro-spinal excitement, the development or accidental accumulation of toxines, etc.

W. R. D.

Motor Symptoms of Mania and Melancholia; with a Theory of their Origin and of the Origin of Delusions arising in these Conditions. By W. H. B. STODDART, M. D. The Lancet, No. 4201, Vol. I of 1904, March 5.

Some years ago the author drew attention to the fact that melancholiacs suffer from paralysis and rigidity of the muscles of the spinal column and of the large proximal joints the movements of the wrists, fingers, ankles, and toes being relatively unimpaired. In the lesser degrees of melancholia slight paralysis has to be inferred from the patient's slowness of movement and from his inability to occupy himself in any way. It is only in the severest cases that there are obvious well-marked paralysis and rigidity, but these are the cases which should be studied first. The rigidity is more easily investigated than the paralysis. Rigidity is most marked in the muscles of the trunk and neck, less marked but strikingly present in the shoulders and hips, less marked at the elbows than at the shoulders, less marked at the wrists than at the elbows and usually absent from the fingers. Similarly, rigidity is less marked at the knees than at the hips, is very slight at the ankles, and usually absent from the toes. The rigidity affects flexors more than extensors and adductors more than abductors; hence the attitude of the melancholiac is one of general flexion and adduction, the shoulders being raised owing to the rigid contraction of the upper part of the trapezius. The author calls the condition proximal rigidity in contradistinction to peripheral rigidity such as occurs in hemiplegia where the fingers and wrists are most affected.

In making observations on the above points voluntary resistance or assistance must be discounted. This usually disappears after three or four movements, and is most easily studied where it is most intense, that is

in the large proximal joints. In a severe case the patient cannot raise the elbows above the shoulders when asked to hold the hands straight above the head. The patient stands because the rigidity of the hips renders sitting uncomfortable. The fingers are in constant motion, or the agitation shows itself in grosser movements.

On the other hand, the movements of a maniac in a state of motor excitement take place for the most part at the large proximal joints. The trunk sways freely as the patient walks and when she runs there is exaggerated movement at the hips, whereas in the running of a sane woman there is little movement of the hips. The maniac shakes hands from the shoulder, the melancholiac from the wrist. In many severe cases of mania there are peripheral as well as proximal movements. After further discussion the author concludes that: (1) In mania an irritating product is formed within the cortical neurons—such a view is further supported by the frequency of hallucinations in mania; (2) In melancholia a paralysing product is formed within the cortical neurons; (3) In agitated melancholia there is a combination of deleterious influences—viz., a paralysing product within the cortical neurons and also an irritating body in the plasma which bathes the nerve cells; (4) In a few cases of mania there is in addition to the irritating body within the nerve cell an irritating body in the plasma which bathes the nerve cell.

The author then discusses the origin of delusions and endeavors to show that most of the delusions of the melancholiac arise from his feeling of inactivity, while the delusions of exaltation arise from the feeling of activity which results from the stimulation of his cortical neurons.

The After-Effects of Head Injuries. Abstract of the Hunterian Lectures.

By T. CRISP ENGLISH. The Lancet, Nos. 4199, 4200, 4201, Vol. I of 1904, Feb. 20, 27, March 5.

The conclusions are as follows:

1. Whilst some degree of mental impairment is comparatively common after injuries to the head the changes are seldom sufficiently marked to be regarded as forms of insanity.

2. Insanity may result from injury to any part of the head.

3. Traumatism leads to insanity in two ways: (1) Direct insanity due to the actual injury to the brain or to its membranes apart from hereditary or other predisposing causes; and (2) Indirect insanity—that is to say, any form of insanity occurring as the result of lowered resistance of the brain due to injury in patients with a predisposition to insanity, hereditary or otherwise.

4. Every variety of mental change may be produced by traumatism, although some forms are commoner than others.

5. It is at present undetermined whether injury to the prefrontal region is more likely to be followed by mental disturbances than injury to other parts of the brain.

6. Only a small proportion of the cases of traumatic insanity are open

to relief by operation; for a localizing indication in an accessible region must be present.

7. The results so far have been encouraging and although the operation must necessarily be exploratory it is fully justifiable in suitable cases, especially in face of the otherwise hopeless condition of these patients.

W. R. D.

Considérations Générales sur la signification clinique de la Démence Précoce. Par DR. F. MEEUS. *Annals de la Société de Médecine de Gand.* Vol. LXXXIII, p. 17.

After reviewing the opinions of other writers, and detailing several illustrative cases, Meeus comes to the conclusion that, after examining a number of hebephrenic and catatonic patients and carefully observing the individual changes, one may go progressively by intermediate degrees from cases without emotional bases, or hebephrenics, to two varieties of the catatonic form, and in the catatonic form itself from the case of stupor to the case of excitement. Reduced to a minimum in the hebephrenic, negativism and motor symptoms increase progressively and supply two principle forms, one stuporous, characterized by negativism, the other excited, characterised by diminished sensation. One may say that the hebephrenic and catatonic forms of Kraepelin are in one case a slight manifestation, and in the other a severe manifestation of the same disease. Meeus concludes by reiterating his belief that the term dementia hebephreno-catatonia is a better name than dementia praecox, as he has before stated in a paper in the *Journal de Neurologie* (Nov., 1903).

W. R. D.

L'état du fond de l'oeil chez les paralytiques généraux. Par P. KERAVAL and A. DANJEAN. *Archives de Neurologie*, Vol. XVII, p. 193. Mars, 1904.

This article is complementary to two papers published previously. (See *Archives de Neurologie*, Vol. XV, p. 1, and Vol. XVI, pp. 354, 420.) The conclusions are as follows: (1) In 41 female paretics 13 showed normal papillae. (2) In 21 cases the papillary lesions were similar to those noted in the previous papers. (3) Eliminating 7 cases where there was some doubt whether the lesions found were dependent upon the paresis, there remained 38 per cent of the patients in whom the fundus was normal and 61 per cent showing lesions of the fundus.

W. R. D.

The Early Diagnosis of General Paresis. By WILLIAM A. WHITE, M. D. *Medical News*, Vol. 84, p. 679, April 9, 1904.

White believes that if we have a patient in middle life with Argyll-Robertson pupils and abolished knee jerks, and can eliminate tabes, we may strongly suspect paresis. If in addition there is a great change in the character of the individual, with irritability, restlessness, and a host of minor mental symptoms which individually mean nothing, but in their

ensemble speak for mental deterioration, we need not hesitate to be convinced. Loss of the consensual light reflex and speech defects, transient palsies, parietic seizures and optic nerve atrophy are also important early symptoms.

The differential diagnosis from tabes is not easy, but in a case suggestive of tabes with slightly atypical symptoms and an associated dementia, a tentative diagnosis may be made.

In the differentiation from neurasthenia the general mental attitude is important. The neurasthenic complains of all his pains, whereas a parietic is indifferent or believes he is in good health. In neurasthenia there is also no dementia, no disturbance of speech or writing, and none of the above symptoms noted as being present in paresis.

Sometimes the differentiation from chronic alcoholism is difficult, but the history and absence of physical signs are important. Brain tumor may cause symptoms indicative of paresis, but the focal character of the physical signs is the most important differential point.

Disseminated sclerosis is differentiated from paresis by the combination of intention tremor, scanning speech, nystagmus, and spasticity. From cerebral syphilis the diagnosis may be made on the focal character of the defects of speech and writing, if they are present, the permanent palsies and the nocturnal headaches.

W. R. D.

Book Reviews

Bibliographie der gesamten wissenschaftlichen Literatur über den Alkohol und den Alkoholismus. Edited by Dr. med. A. Abderhalden. (Urban & Schwarzenberg, 1904.)

In the work before us we find on some five hundred pages a careful collection of references to the literature on alcohol and alcoholism. About sixty collaborators in various countries have joined the editor, and the Academy of Sciences in Berlin has materially aided the undertaking. The book does, of course, not contain the titles of all papers which have been written on alcohol, but aims to contain all that are of any definite scientific value. Since this aim has evidently been achieved, and since the titles are extremely well arranged, we have here a bibliography of great value. It need scarcely be stated that there are a great many references in this work which are of especial interest to the neurologist and psychiatrist.

The titles are divided into two groups, namely, a medical and a sociological. The medical part comprises pp. 1-379, the sociological, pp. 380 to 504. In the former we find subdivisions on the chemistry of alcohol (1-72), the physiological and toxicological actions of alcohol (73-108), the therapeutic actions of alcohol (109-135). The most important portions, to the readers of this journal, are to be found under the headings of the pathological action and the psychic action of alcohol. Under the former (pp. 136 to 235) we find the references to the literature of the action of alcohol on various organs and mechanisms, on the course of various diseases and intoxications, its influence upon age, morbidity and mortality, its relation to heredity and degeneracy, and its action upon the infantile organism. We find, of course, a special subdivision on the action of alcohol upon the nervous system. This portion contains from 300 to 400 references and is subdivided respectively into the pathological anatomy and the pathology of the central and of the peripheral nervous system.

Under the heading of psychic actions of alcohol we find first the references to works on the psychology, namely, the literature of the experimental psychological work done in regard to alcohol, then a chapter on psychopathology. Here we find (1) the influence of alcohol on psychoses, (2) alcoholic psychoses. The latter division contains about 20 pages of references and takes up the subject in a very exhaustive manner. In a special chapter of 48 pages we find the subjects of intolerance to alcohol, and the relation of alcohol to crime, suicide and accident.

The sociological part deals with the general subject of alcoholism, its

causes, its social consequences, its distribution in various countries, and the different means of combating alcoholism which have been adopted in various countries.

So thorough a bibliography is of inestimable value to anyone who wishes to make a study of the subject, and it may well serve as an example to be followed in other branches of science.

A. HOCH.

The Worth of Words. By DR. RALCY HUSTED BELL, with an Introduction by DR. WILLIAM COLBY COOPER. Third edition. (New York, Hinds & Noble.)

The introduction to this little volume contains the statement that it is called into being because it is "greatly and urgently needed." There can be no doubt that there is general and urgent need of works which may influence the common use of words in the direction of correctness and good taste, but a slight note of pretension seems to lurk in the implied claim that this little book is in itself equal to the missionary work involved in such an undertaking. The author's purpose, as announced by himself, however, is reasonable and appropriate, namely, the intention of putting into ready form some helpful gleanings from reputable authorities on the true worth of words.

The chapter treating of the distinction between good and bad words is one of general interest; but that devoted to vulgarisms is perhaps the best in the book, for it is evidently written under the inspiration of good taste and good sense, and gives excellent reasons why words not actually slang are, nevertheless, most undesirable acquisitions to our language. *Donate* and *enthuse*, for example, are unconditionally condemned. The concluding section on the changes in the meaning of words contains much interesting and unexpected information, and shows an extensive acquaintance with literature.

Transactions of the College of Physicians of Philadelphia. Third Series, Vol. 25. (Philadelphia, 1903.)

This book contains 56 pages devoted to executive matters such as lists of officers, committees, members, etc., and memorial notices of members who have died during the year. Following are a number of papers which have been read before the College. These occupy 182 pages and include several of considerable interest to neurologists, as well as a number of more general medical interest.

W. R. D.

The Physiognomy of Mental Diseases and Degeneracy. By JAMES SHAW, M. D., Member of the British Medico-Psychological Association, etc. (Bristol: John Wright & Co. London: Simpkins, Marshall, Hamilton, Kent Co., Ltd., 1903.)

Books of this character have an undoubted value to the student and practitioner, although their range of utility is limited. The illustrations of mental disease are well selected and typical, but they have more meaning

to persons who are familiar with cases of insanity than to medical students. The representations of the stigmata of degeneracy are so excellent that one hopes that the author will extend the volume at some future time to represent all of the common stigmata of this condition.

Erbsyphilis und Nervensystem. Von Dr. JOHANNES BRESLER. (Leipzig: S. Hirzel, 1904.)

This "literarische Studie" has been well made and the author is to be congratulated on having achieved his task so successfully. The book is little more than a collection of abstracts of papers connected with hereditary syphilis and diseases of the nervous system, classified under appropriate headings. No attempt is made to give a critical review of the subject. It consists of 141 pages, twenty-five of which are occupied by a list of the literature arranged alphabetically according to author. The work will be of value to those interested in the study of nervous and mental diseases.

W. R. D.

Index Philosophique. Philosophie et Sciences Annexes. Première Année 1902. Edited by N. VASCHIDE and BUSCHAN. (Paris: C. Nand, 1903.)

This is the first number of annual index published under the auspices of the *Revue de Philosophie* which is intended shall be more complete than those heretofore published. It is intended that future volumes shall contain abstracts of the more important papers. Like all publications of this kind, the present volume is of great convenience to those in quest of the literature on certain subjects. There is a general index of subjects and an index of authors. All references concerning a single subject are grouped together. There are a number of typographical errors which fortunately do not seriously impair the value of the book. Errors in spelling English and German words are numerous. On the whole, this book is a valuable addition to our literary armamentarium.

W. R. D.

Ueber den physiologischen Schwachsinn des Weibes. Von Dr. P. J. MOEBIUS. Halle, 1903, Carl Marhold. C. Auflage.

This monograph has probably attracted more attention than it deserves, as the comments, criticisms, prefaces to former editions, etc., have expanded it from about 30 pages to over 120. Viewed from a humorous standpoint the author has done much to provoke the gayety of nations. Taken seriously, which is difficult, the book does not prove conclusively that women are so unintellectual as the author seems to think. It is the first of Dr. Moebius's numerous sex studies, but in our opinion the least deserving serious attention.

W. R. D.

A Practical Treatise on Nervous Diseases for the Medical Student and General Practitioner. By F. SAVARY PEARCE. New York and London, 1904: D. Appleton & Company.

The typography and illustrating have been well done and the book presents an attractive appearance; further but little favorable can be said.

The book seems carelessly written and errors both of omission and commission are numerous. It is to be regretted that the book was ever published in its present condition. There seems to be little doubt that during the preparation of his book Dr. Pearce was suffering from the disease from which he later died and under the circumstances it would seem but proper that the book be withdrawn from sale. W. R. D.

Thirty-third Annual Report of the Board of Commissioners of Public Charities of the Commonwealth of Pennsylvania for 1902; also the Report of the General Agent and Secretary. Statistics, and the Report of the Committee on Lunacy. Transmitted to the Legislature, January, 1903. Wm. Stanley Ray, State Printer of Pennsylvania, 1904.

This report contains a striking plea for money for the care of the insane even if it be necessary to obtain it by eliminating small hospitals of a purely local character which now absorb so much of the public money as to leave little for the insane. Twenty years ago less than twenty private charities applied to the Legislature of Pennsylvania for State aid. At the date of the report the number applying had nearly reached two hundred. Under the circumstances it is not strange that the plea of poverty is loudly made when any attempt is made to secure appropriations for a much needed institution for the chronic insane. The Committee on Lunacy make an earnest application for the erection of additions to existing institutions on the cottage plan as less expensive, more flexible and better suited to the requirements of the chronic insane. The increase in the number of the insane during the year covered by the report was 318 persons.

Forty-sixth Annual Report of the General Board of Commissioners in Lunacy for Scotland, Presented to both Houses of Parliament by Command of His Majesty. (Glasgow: Printed for His Majesty's Stationery Office. By James Hedderwick & Sons, 1904.)

The statistics of pauper lunatics or rather of lunacy among the dependent classes show an increase since 1858 of 190 per cent. In January, 1858, there were 5824 insane persons under the charge of the Commissioners. In January, 1904, the number had increased to 16,894 (an apparent increase of 11,758) and a net increase of 11,070. The number of pauper lunatics in private dwellings has increased during the past ten years from 2565 to 2658. The report contains much interesting information concerning Scotch lunacy methods and deserves the careful study of all American alienists.

Fifth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the year ending September 30, 1903. (Boston: Wright & Potter Printing Co., State Printers, 1904.)

This report contains details respecting the institutions under the care of the Board of Insanity. These are institutions for the insane, the

epileptic, the inebriate and the feeble-minded. The account of the operations of the Hospital for Dipsomaniacs and Inebriates is not altogether reassuring although we are told the "statistics confirm the belief that considerable good has been accomplished." When we read, however, that the number of escapes has been 52 per cent of all admissions during the year, we can but wish that more might have been induced to remain long enough to acquire some of the "good" which is mentioned. The astonishing statement is made that of 3003 commitments during the decade, 1685 escaped or 56 per cent of the commitments. We agree with the State Board of Insanity that "Such a showing seems to demonstrate the inadequacy of methods hitherto adopted and the necessity of effective custodial care so far as may be required, for the detention of patients who are suitable for treatment." It is evident that the parole system has no legitimate place in an institution for the care of inebriates. Labor and an indeterminate sentence in the judgment of the writer offer the only hope of ultimate benefit to the large majority of dipsomaniacs.

The increment of the insane in public institutions in Massachusetts for 1903 was 339 as compared with 465 during the year 1902. The State Board of Insanity believes that the annual increment will be about 400 per year for the coming five years. The State Colony from which so much has been hoped in the treatment of the chronic insane has made very slow progress. It is hoped that during the year 1904 100 patients of each sex will be provided for in the Colony. During the period which has elapsed since the Colony was established the increment has been at least 1200 insane persons!

Outlines of Psychiatry. Introductory Lessons Designed for the use of Students of Medicine. By CHARLES GILBERT CHADDOCK, M. D., Professor of Diseases of the Nervous System. Marion-Sims-Beaumont College of Medicine, Medical Department of St. Louis University. (St. Louis Commercial Printing Company, 1904.)

This is a sensible book and well-designed to excite the interest of medical students in an important branch of medical study. As a good example of its style take the following from the introductory chapter. "Degeneracy is a term very broadly applied. In general it means a condition of development mental and physical that leaves the individual short of the attainment of the average mental and physical development of his race. In many cases a lack of mental balance is manifested which in certain cases becomes genius, in others imbecility or insanity. As a rule mental and physical degeneracy go hand in hand; that is, imperfections of physical development and defects of psychic developments are observed in the same individual. This is a rule, not a law. Many individuals present defects of physical development without any signs of mental degeneracy and *vice versa*: the presence of one is not a demonstration of the other. Where both are observed in one person, they can be regarded as correlated to the general defect of the organization of the

individual." It would be difficult to present the subject of degeneracy more clearly or in fewer words.

The definitions in a chapter on Elementary Psychology are clear and to the point. We notice, by the way, that the author still adheres to the three-fold aspects of the mind, the feelings (emotions), the intellect (ideas) and the will (conduct). However much psychologists may object to this division as artificial and metaphysical it is doubtful if in any other manner it is possible to convey a conception to the student of the order and succession of mental disorder.

We observe that the author's classification of insanity is largely that of Krafft-Ebing. He speaks of Paranoia and does not speak of Dementia Præcox, the present shibboleth of the Kraepelin school. His definition of Paranoia is worthy of quotation: "Paranoia is a form of insanity characterized by delusions of primary and spontaneous origin, which become logically systematized and exercise a predominating influence on the thought, feeling and action of the individual. It is chronic in its course, though presenting exacerbations and remissions and accompaniments of secondary emotional anomalies as reactions to the delusions, which produce at times the features of acute insanity."

The book is such an excellent outline of psychiatry we can but express the hope that the author may at no distant day clothe the skeleton with flesh and give us a full well-rounded treatise upon the subject.

Pamphlets Received

Is the Journal of the American Medical Association a Partisan Organ?
G. Frank Lydston, M. D.

How to Write a Medical Article; A Plea for Plagiarism. G. Frank Lydston, M. D. Reprinted from The Journal of the American Medical Association, November 28, 1903.

Practical Clinical Notes on the Administration and Action of Iodo-Nucleoid or Organic Iodine. G. Frank Lydston, M. D. Reprinted from Medicine, March, 1904.

Multiple Sclerosis with Dementia: A Contribution to the Combination Form of Multiple Sclerosis and Dementia Paralytica. J. Ramsay Hunt, M. D. The American Journal of the Medical Sciences, December, 1903.

Congenital Cysts of the Fourth Ventricle. A Report of Two Cases Associated with Tumor of the Optic Thalamus and Crus Cerebri. J. Ramsay Hunt, M. D. The American Journal of the Medical Sciences, March, 1904.

Tuberculosis of the Spinal Cord: With Report of Cases of Tuberculous Myelitis and of Tuberculous Pachymeningitis. Charles L. Dana and J. Ramsay Hunt, M. D. Medical News, April 9, 1904.

A Contribution to the Pathology of Paramyoclonus Multiplex (Friedreich's Type). J. Ramsay Hunt, M. D. The Journal of Nervous and Mental Diseases, July, 1903.

Acute Infectious Osteomyelitis of the Spine and Acute Suppurative Perimeningitis. J. Ramsay Hunt, M. D. Medical Record, April 23, 1904.

Fifty-fifth Annual Report of the Board of Trustees and Superintendent of the Central Indiana Hospital for the Insane. For the fiscal year ending October 31, 1903.

Twenty-eighth Annual Report (1903) of the New York State Reformatory at Elmira.

A Study of Normal and Pathological Conditions of the Bursae of the Neck with Special Reference to the Subhyoid Bursa. Willis S. Anderson, M. D. Assistant to the Chair of Laryngology, Detroit College of Medicine; Laryngologist to the Harper Hospital Polyclinic, etc., Detroit, Michigan. American Journal Medical Sciences, March, 1904.

Intratracheal Injections; Experimental and Clinical Study of their Value in Diseases of the Lungs. Willis S. Anderson, M. D. Read before the Wayne County Medical Society, February 4, 1904. The Journal of the Michigan State Medical Society, March, 1904.

The Great Value of Drainage and Ice in the Early Stages of Mastoiditis. Sargent F. Snow, M. D. Reprinted from The Journal of the American Medical Association, January 2, 1904.

Report of the Medical Superintendent of the Quebec Insane Asylum for the year 1902 to the Honorable Provincial Secretary.

Bulletins of the Oregon State Board of Health:

1. The Story of Small-pox in Oregon and its Testimony to the Value of Vaccination.

2. Hints upon School Hygiene.

3. The Prevention of Typhoid Fever.

4. Prevention and Cure of Consumption.

Seventh Annual Report of the Loomis Sanitarium and Annex (For the Treatment of Tuberculosis). October 31, 1903.

AMERICAN JOURNAL OF INSANITY

HYDROTHERAPEUTICS.¹

By GEORGE T. TUTTLE, M. D.

McLean Hospital, Waverley, Mass.

The use of water in the treatment of disease has received a fresh impetus in this country in recent years largely through the efforts of Dr. Simon Baruch, and hydrotherapeutic apparatus has been and is still being installed in many private sanatoria and in public hospitals for nervous and mental diseases. Whether it is a fashion, a fad which in time will disappear, remains to be seen. It must be remembered, however, that hydrotherapy has been used much more extensively in continental Europe than in this country and that the use of heat and cold, in some form or other, in the treatment of disease, is as old as the practice of medicine. The permanence of the present movement will depend, partly on its value as demonstrated by many careful observers, but perhaps quite as much on the accuracy with which it is prescribed by those who attempt to use it. Each one must acquire for himself a knowledge of the proper use of this agency without which he employs it in a routine way, without a proper selection of the patients or adaptation to the individual of the procedure employed.

This report is a record of the experience of the McLean Hospital where hydrotherapy has been actively, though more or less empirically, used since the spring of '99.

For a few months, previous to the installation of a regular apparatus in the bathrooms of the gymnasium for women in June,

¹Read at the annual meeting of the American Medico-Psychological Association at St. Louis, May 30 to June 3, 1904.

'99, such methods were employed as are adapted to the bedroom or the ordinary bathroom, viz., cold ablutions; the dry pack (taking the place of the hot air bath) followed by the half bath, cold affusions, or the dripping sheet; and cold packs. In all cases the temperature of the water at first was 85° and was gradually reduced day by day to 60° F. By the use of these one can obtain much of the beneficial effect of hydrotherapy without complicated and expensive apparatus. Since installation of the apparatus the following baths have been given in addition to those above mentioned with these limits of temperature, duration and pressure:

Hot air bath, 180°-190°, 3-10 minutes.

Circular douche, 100°-90°, ½ to 1 minute, 15 to 38 lbs.

Fan douche, 85°-56°, 10 to 30 seconds, 15 to 38 lbs.

Jet douche, 75°-56°, 10 to 30 seconds, 15 to 30 lbs.

Scotch douche (either fan or jet) 110° alternating with 60°, ½ to 3 minutes, 15 to 30 lbs.

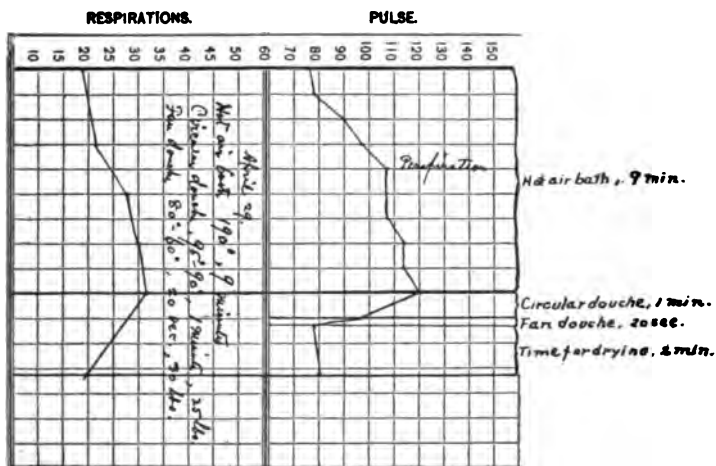
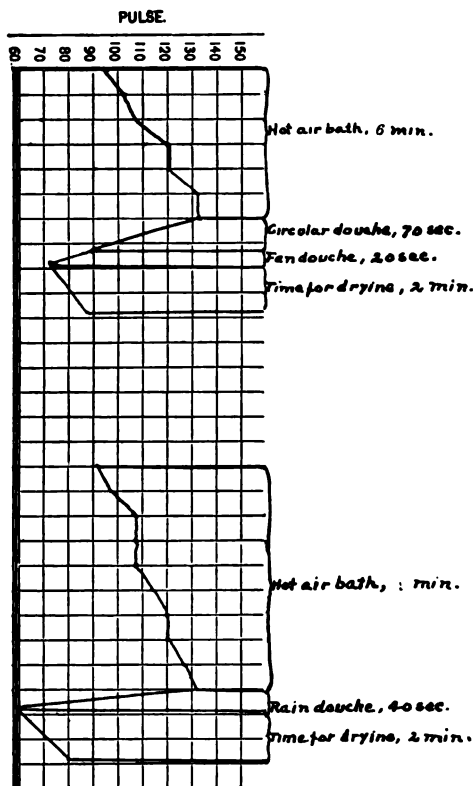
An attempt has been made to select from these, or to make combinations of, what would be most beneficial for the individual patient. The effect desired has been tonic or stimulating and careful attention has been paid to obtaining a good reaction, that is, a comparatively permanent return of the blood to the surface vessels. The dry pack or hot air bath is used first in any combination, dilating the surface vessels. The immediately subsequent application of cool or cold water causes them to contract, and there is a diminished blood supply in the skin. The impact of the water delivered under pressure tends to aid its return by reflex stimulation of the heart. There is no doubt that cold applications to a large part of the surface of the body at once increases the amount of blood in the internal organs. If the heart is strong enough immediately to return this blood to the surface, there has been a healthful flushing of these organs and theoretically an increased activity. If a reaction is not established, a dangerous congestion may result. The problem is to adapt the temperature, time and pressure to the strength of the individual that the reaction may be as perfect as possible. People differ in regard to their ability to respond and there is also a variation in the same person at different times according to his condition, so that even healthy people should use caution in taking these baths when they are tired. Cases of chronic tire require the most careful super-

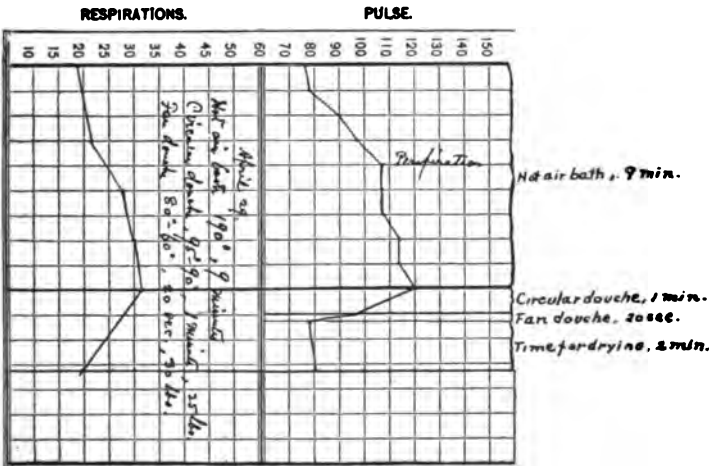
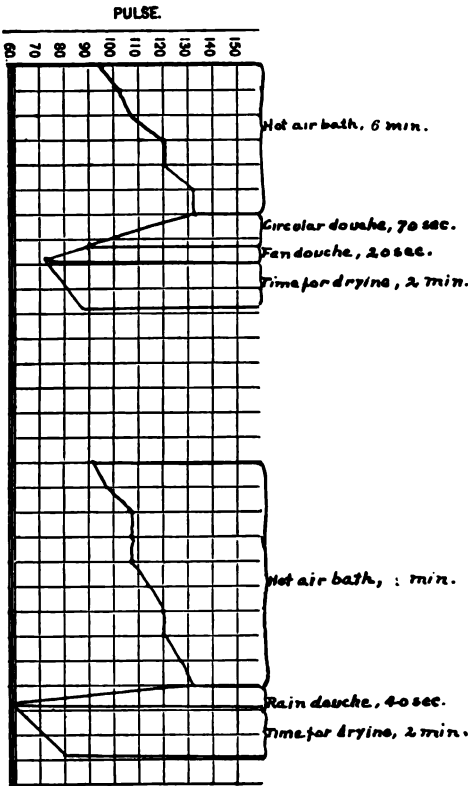
vision in order to avoid doing them harm. Those who are physically strong usually experience a sense of vigor and well-being after the most active measures, which feeling may last throughout the day, or in some be followed by drowsiness in an hour or two. The neurasthenic, if the bath is too vigorous, complains of being tired or completely exhausted, and will often lie down for an hour or two, the testimony being something like this: "They use me all up," "I was all tired out," "I could scarcely get back to my room," etc. Effort was made at first to obviate this feeling of exhaustion by giving the baths less frequently, perhaps three times a week, but it has been found better to raise the temperature, lower the pressure, and above all to shorten the time, continuing the baths daily. Considerable weight should be given to the testimony of patients with regard to their feelings after the baths, and if they complain of exhaustion, milder measures should be prescribed. The almost universal testimony of neurasthenics seems to conflict with the claim that these baths increase the capacity for work. Baruch says that cold applications increase, and warm decrease it. This statement is based upon the ergograph experiments of Vinaj and Maggiori in '92 and '93, who give fatigue curves showing a wonderful increase of work done after a cold plunge at 50° for 15 seconds, a gradually cooled bath at 96° to 68° for five minutes, a wet pack of two hours followed by a cold dip, a rain douche (50°), and a Scotch douche (98° and 50°),—following all these there is a great increase in working capacity; after the second it is increased three-fold. Vinaj and Maggiori show also by experiments that cold applications restore the working capacity after fatigue. It is claimed that warm applications also have the effect of increasing the capacity for work, and of restoring it after fatigue, if they are combined with some mechanical irritation, like friction or the impact of water delivered under pressure, which counteracts the enervating effects of the temperature. The statement then is that only the uncomplicated, simple, warm applications reduce the capacity for work while all the others increase it, the cold, by virtue of their temperature, the warm, to a less degree in spite of their temperature, the effect of which is overcome by mechanical irritation.

In order to ascertain whether baths as given at the McLean

Hospital really increase the capacity for work, four series of experiments have been made on three patients and a nurse, all physically strong men. Each pulled on the ergograph to exhaustion twice with an interval of fifteen minutes, then went to the gymnasium for a bath, returned immediately to the laboratory and again pulled to exhaustion twice, with the same interval of time. For purposes of control the same men repeated the experiment on another day in the same way without the bath. As shown by the third and fourth curves there was a slight loss of capacity for work in three cases after the bath and an increase in the fourth; on the days when no bath was given there was sometimes a gain, sometimes a loss. If the results show anything they indicate a lessened capacity after the bath. Certainly they do not show the great increases above mentioned, although the baths given were not essentially different from those of Vinaj and Maggiori.

Observations were made on the variations in pulse rate, respiration and temperature during the various stages of an ordinary bath, which show that they all vary directly with the temperature to which the individual is subjected, with the exception that lowering of the pulse rate by cold applications is somewhat delayed by the mechanical irritation of the impact of the water in the douche, and also that the sudden application of cold douches causes considerable irregularity in the rhythm and depth of respirations, but they both finally drop under the influence of a lowered temperature, and they drop much more rapidly than they were raised by heat. The fall in pulse rate is sometimes very sudden,—in one case, in 70 seconds there was a change in the rate of 60 beats; in another 66 in the same time; in a third, 72 in 40 seconds. The duration of the hot air bath was from 6 to 10 minutes; the patient began to perspire in from 2 to 9 minutes; the pulse rate increased to 120 or 130 during the hot air bath, and dropped in some cases to 60 or lower in from 40 seconds to $1\frac{1}{2}$ minutes. The respirations during the hot air bath increased from 5 to 14 a minute, and immediately returned to the normal point after the douches. The temperature taken in the mouth was raised from 2° to 1.2° by a hot air bath (180° - 190°) of from 7 to 15 minutes' duration, the rise varying in different persons and in the same person on different days. It was found to be





ERGOGRAPH EXPERIMENTS.—EFFECT OF BATHS ON CAPACITY FOR WORK.

Case.	1902.	Pull Number.		Total Height.		Pull Number.		Total Height.		Gain or Loss.	Gain or Loss.
		1st Trial.	2nd Trial.	1st Trial.	2nd Trial.	1st Trial.	2nd Trial.	1st Trial.	2nd Trial.		
I	March 18	56	55	1185	1230	43	44	943	1039	-92	A bath was given between the 2nd and 3rd trials on March 18 and 19. Bath:—Hot air, 100°, 9 minutes (perspiration); Scotch douche, 100°, alternating with 60° for 1 minute, 30 lbs. pressure; fan douche, 60°, 15 sec., 30 lbs. Bath as for case I, between 2nd and 3rd trials on March 20, 22 and 23. Bath between 2nd and 3rd trials on April 23 and 24. Bath:—Hot air, 100°, 5 minutes; circular douche, 70° to 80°, 1 min., 33 lbs.; jet douche, 70°, 15 sec., 23 lbs.; fan douche, 60°, 15 sec., 23 lbs. Bath as for Case III, between 2nd and 3rd trials on April 23 and 24.
	" 19	43	47	959	1239	36	39	940	986	-25	
	" 23	61	44	1331	1197	57	47	1311	1109	-1	
	" 24	49	39	1198	995	47	45	1153	1123	+4	
	" 28	51	56	1375	1473	66	63	1306	1310	+20	
	April 10	60	56	1468	1530	53	57	1439	1465	=	
	March 20	47	44	1033	1127	37	35	1033	956	-19	
	" 22	33	44	1066	1246	36	35	1077	1035	-19	
	" 25	35	36	1055	1054	37	35	1050	925	+3	
	" 24	35	39	1114	1163	35	40	1005	1112	+1	
II	" 28	36	33	1054	946	33	35	1053	1045	+4	Bath between 2nd and 3rd trials on April 23 and 24. Bath:—Hot air, 100°, 5 minutes; circular douche, 70° to 80°, 1 min., 33 lbs.; jet douche, 70°, 15 sec., 23 lbs.; fan douche, 60°, 15 sec., 23 lbs. Bath as for Case III, between 2nd and 3rd trials on April 23 and 24.
	April 7	36	38	1126	1115	41	43	1053	1153	+4	
	" 8	44	43	1266	1364	45	45	1263	1263	+4	
	" 9	41	43	1147	1160	45	41	1223	1063	+3	
	" 10	38	43	1185	1244	44	43	1200	1200	+7	
	April 23	43	43	1745	1723	43	43	1588	1569	-1	
	" 24	43	43	1716	1631	45	43	1637	1477	+4	
	" 21	44	45	1833	1830	44	38	1804	1590	-7	
	" 22	43	43	1876	1891	43	44	1816	1744	+3	
	" 23	51	48	1876	1639	56	53	1754	1864	+15	
IV	" 24	44	48	1564	1661	59	51	1596	1721	+13	Bath as for Case III, between 2nd and 3rd trials on April 23 and 24.
	" 21	46	43	1637	1593	51	53	1671	1765	+14	
	" 22	46	50	1649	1836	44	53	1546	1736	=	
	" 23	51	48	1876	1639	56	53	1754	1864	+15	

lowered somewhat immediately after an application of cool or cold water, but its fall was not so rapid as in the case of pulse rate and respiration.

There is a change in the blood pressure under the influence of hot and cold applications which is rapid and of short duration. It varies inversely with the temperature. Hot applications lower it, cold applications raise it. I have used at different times the instruments of Fitz, Gärtner and Riva Rocci. Precautions were taken to eliminate so far as possible other causes of variation such as the time of day, position, exercise, fatigue, and emotional disturbances. All the observations were made on women,—patients and nurses.

Notwithstanding considerable variation in the results, there is no doubt that the pressure falls while the patient is in the hot air bath and quickly rises to the normal again during the subsequent application of cool douches. Below is given a table showing the blood pressure of different persons, or the same persons at different times, before the bath, while the patient is in the hot air cabinet and immediately after the cool douche. Each number, except the lowest, is the average of at least ten observations. This sudden, and, in some cases, material fall of the blood pressure is

BLOOD PRESSURE IN MM. HG.

Before the Bath.	While in Hot Air Cabinet.		After Douche.
	Average.	Lowest.	
125	117	110	120
123	115	103	123
107	108	103	115
118	113	106	114
114	105	98	114
118	113	112	111
115	106	97	118
116	105	94	116
110	100	95	112
133	118	110	129
118	112	105	125
132	117	106	134
125	100	91	124
125	112	103	124
126	103	93	126
149	127	122	142
138	132	125	143
134	116	108	133
132	120	110	130
126	121	114	134

no doubt the reason why some people faint in the hot air cabinet, and it should be used cautiously with weak neurasthenics and with elderly people, especially those who show an arterio-sclerosis.

Considerable importance has been attached by Dr. Baruch to the fact that certain procedures are followed by an increase in the number of red and white cells in the blood taken from the lobe of the ear. A hot air bath of 10 minutes followed by a jet douche of five seconds caused an increase of 700,000 red and 1500 white cells. A tub bath of 80° for ten minutes was followed by exactly the same increase. This we have been unable to confirm. Dr. Guy G. Fernald of the hospital staff has made many counts in a very careful way before and again at varying intervals after the baths, taking blood from the lobe of the ear, but without any uniformity of result. Sometimes there has been an increase, again a diminution of both red and white cells, sometimes an increase of one and a diminution of the other. There is no doubt that after a cold bath of from 10 to 15 minutes duration, while the individual is thoroughly chilled, the blood in the surface vessels will contain an increase of cells. This does not show a more active circulation of cells which have been driven out from their hiding places, so to speak (Winternitz). It seems more probable that it is merely a local affair, an irregular distribution of cells and plasma, due to a constriction of the surface capillaries under the influence of cold (Ewing). These capillaries are some of them so small that the cells can only go through singly under normal conditions, and when strongly contracted they may not permit their passage at all, the plasma then running on, leaving many cells stranded. Thus for the time being there is a larger proportion of cells in the blood of the skin. Instead then of causing a more active circulation of cells, the effect is just the opposite in the surface vessels and it is a disadvantage,—a serious one if long continued. All observers agree that it is a temporary affair which disappears within 15 or 20 minutes, or as soon as a reaction is established. Warm baths cause a contrary effect.

I present a few careful observations showing the number of red and white cells before the bath, at the end of the hot air bath, 2 minutes after the douche, and 1½-2½ hours after the bath, with a description of the bath in each case.

Considerable work has been done by various observers to de-

EFFECT OF BATHS ON THE NUMBER OF RED AND WHITE BLOOD CELLS.

Case.	Time.	Before the Bath.			End of Hot Air Bath.			2 Minutes after Douches.			1½ to 2½ hrs. after Bath.			Bath.
		Red.	White.	Ratio.	Red.	White.	Ratio.	Red.	White.	Ratio.	Red.	White.	Ratio.	
I	10 A. M.	4,914,500	9,184	654				4,676,600	7,680	618				Hot Air, 172° 3 m.; circular, 95° 40', 50 sec., 32 lbs.; fan, 75° 40', 30 sec., 32 lbs.
II	"	5,253,000	6,380	826				4,817,000	7,440	648				Hot Air, 180° 8 m.; circular, 95° 40', 45 sec., 30 lbs.; fan, 85° 45', 25 sec., 30 lbs.; jet, 65°, 10 sec., 25 lbs.
III	"	4,720,000	9,211	512				4,779,000	8,911	536				Hot Air, 190° 16 m.; circular, 95° 40', 1 m., 32 lbs.; fan, 65° 30 sec., 32 lbs.; jet, 65°, 5 sec., 25 lbs.
III	"	4,785,665	10,000	451	5,047,242	8,264	588	4,535,410	8,972	500	4,558,841	7,575	592	Hot Air, 188° 10 m.; circular, 95° 40', 1 m., 35 lbs.; fan, 70° 30 sec., 30 lbs.; jet, 70° 15 sec., 25 lbs.
III	"	4,881,841	8,666	503	4,648,907	9,892	470	4,673,905	10,444	447	4,536,937	10,346	440	Hot Air, 190° 11 m.; circular, 95° 40', 1 m., 35 lbs.; fan, 70° 40', 30 sec., 35 lbs.; jet, 60°, 15 sec., 25 lbs.
IV	"	4,875,000	5,995	730	4,322,000	5,477	790	4,180,000	5,804	736				Hot Air, 188° 14 m.; circular, 95° 40', 35 sec., 28 lbs.; fan, 85° 48', 25 sec., 28 lbs.
V	"	4,810,000	7,385	605	4,639,000	9,020	514	4,463,000	9,295	450	4,357,000	8,121	570	Hot Air, 180° 17 m.; circular, 95° 40', 30 sec., 30 lbs.; fan, 70° 30 sec., 30 lbs.; jet, 70°, 5 sec., 25 lbs.
V	"	4,674,663	7,800	640	4,406,105	6,268	703	4,172,722	7,138	584	4,123,793	7,249	598	Hot Air, 180° 12 m.; circular, 95° 40', 30 sec., 35 lbs.; fan, 65° 30 sec., 35 lbs.; jet, 65°, 5 sec., 25 lbs.
VI	"	4,713,661	9,108	511	5,067,165	8,654	581	4,987,254	7,698	651	4,905,523	7,462	671	Hot Air, 180° 8 m.; circular, 95° 40', 45 sec., 30 lbs.; fan, 70° 40', 25 sec., 30 lbs.
VII	"	5,600,114	5,698	938	5,100,741	5,368	950	5,455,961	6,182	880	5,394,170	8,666	645	Hot Air, 188° 12 m.; circular, 95° 40', 40 sec., 32 lbs.; fan, 80° 45', 30 sec., 30 lbs.; jet, 65°, 5 sec., 25 lbs.
VII	"	5,828,680	7,068	754	5,009,035	6,897	740	5,029,355	7,583	676	4,889,824	8,121	601	Hot Air, 187° 8 m.; circular, 95° 40', 45 sec., 32 lbs.; fan, 70° 45', 30 sec., 32 lbs.; jet, 65°, 15 sec., 25 lbs.

termine the effect of hot and cold baths on tissue changes of the body. While there is some difference in results, most published reports show an increase of both constructive [?] and destructive metabolism. (The Principals and Practice of Hydrotherapy by Simon Baruch, M. D.: Digest of Metabolism Experiments, by Atwater and Langworthy, 1898.) In none of these experiments was a uniform or fixed diet given. The total amount of nitrogen excreted is a measure of the metabolism of the body only when the nitrogen of the food is taken into consideration.

Observations have been made by Dr. Otto Folin, in the laboratory of the McLean Hospital, to determine whether such baths as we are giving cause any change in metabolism. Nine persons were given a uniform diet adapted to the capacity of the individual, containing a known amount of nitrogen. After this diet had been continued for two days the urine was collected for each twenty-four hours and analyzed with the results shown in the following tables. After three or four days, baths were given for about the same period of time. The results are practically negative.

While these experiments seem to show that there is no increase of metabolism from such hydiatic procedures as we employed, they do not show that if the patient were free of the restriction of a fixed diet he would not eat more, gain in weight, and eliminate more nitrogen during the bath period. Our records show that of 216 consecutive cases who were given similar baths, 168 gained in weight and 48 lost. The gain was from $\frac{3}{4}$ to $33\frac{3}{4}$ and the loss from $\frac{1}{2}$ to $22\frac{1}{2}$ lbs. It has been noticed that the gain is usually preceded by an initial loss of a pound or two during the first week of the baths.

Cold packs have been given at temperatures between 85° and 60° with a duration of from $\frac{1}{2}$ to 2 hours. If often changed, they reduce the temperature of the body; if long continued, they raise it. They have been found exceedingly useful in cases of maniacal excitement for their soothing and even hypnotic effect.

While my observations thus far do not sustain some of the claims made for hydrotherapy, there are sufficient reasons for its use. Not the least of these is the fact that it can be adapted to the physical condition of any patient. It seems to act on the circulation, respiration, blood pressure and temperature, without active muscular exertion on the part of the patient. There probably is

EFFECT OF BATHS ON METABOLISM AS SHOWN BY ANALYSIS OF THE URINE.

	1902.	CC. in 24.	Sp. Gr. 1.0—	Total N ₂ gms.	Total P ₂ O ₅ gms.	Total S O ₂ gms.	Ratios.			Gain or Loss in Weight, gms.	Days of Bath.	Remarks.
							100 N ₂ :					
							P ₂ O ₅	S O ₂	100 SO ₂ :			
Man. 36 years.	Mch. 13	1300	20.	16.2	3.35	2.97	20.7	18.3	113.	+220	No bath	Daily diet:—Eggs (with shells) 535 gm.; breast of chicken, 30 gm.; bread, 190 gm.; butter, 75 gm.; sugar, 80 gm.; salt, 5 gm.; apple, 150 gm.; milk, 800 cc.; water, 1000 cc.
	" 14	940	24.5	15.4	2.96	3.10	19.6	20.1	97.4		" "	
	" 15	1100	20.	14.5	2.68	2.68	19.7	18.5	106.7		" "	
	" 16	1040	21.5	15.7	3.13	3.01	19.9	19.2	104.	-220	Bath	Total water in food and drink about 2300 cc. Total N ₂ about 17.2 gm. Total fuel value in calories about 2850.
	" 17	1670	18.	17.8	3.37	3.39	19.	19.	99.4		" "	
Totals.	" 18	975	24.	15.6	3.41	3.15	21.8	20.2	106.2		" "	
	" 19	1215	20.5	16.2	3.16	2.90	19.5	17.9	109.	+150	No bath	Bath:—Hot Air, 190°, to perspiration; Scotch douche, 106° alternating with 60° 1 minute, 20 lbs. pressure; fan douche, 55°, 15 sec., 50 lbs.
	" 20	1180	20.	15.5	3.18	3.02	20.5	19.5	105.		" "	
	" 21	1365	20.5	16.8	3.34	2.75	19.9	16.1	122.		Bath	
	" 22	940	23.5	15.3	2.77	2.90	18.1	19.	96.5	+150	" "	
" 23	1035	27.	15.6	3.11	3.11	21.7	19.	116.4	" "			
Woman, 23 years.	" 24	4745	19.	63.7	12.94	11.87				+150	Bath		Daily Diet:—Tomato soup, 300 cc.; steak, 80 gm.; breast of chicken, 40 gm.; roast lamb, 160 gm.; potato, 250 gm.; bread, 150 gm.; butter, 75 gm.; jelly, 75 gm.; sugar, 50 gm.; salt, 5 gm.; orange, 1 baked apple; milk, 800 cc.; water, 1000 cc.
	" 25	1200	25.	16.9	3.74	3.41	22.1	20.2	109.7		" "	
	" 26	950	23.	14.6	3.04	2.63	20.6	19.4	107.4		-142	Bath
	" 27	980	27.	15.3	3.25	3.97	21.2	19.4	100.4	" "		
	" 28	1035	26.	15.6	2.92	2.96	18.7	19.	98.6	-300	Bath	
" 29	4115	26.	62.4	12.95	12.17				" "			
Totals.	Mch. 20	1600	19.	12.76	3.74	3.41	22.1	20.2	109.7	+307	No bath	
	" 21	1830	18.5	13.10	3.04	2.63	20.6	19.4	107.4		" "	
	" 22	1300	17.	12.23	2.19	1.86	17.9	15.2	118.		" "	
	" 23	1040	18.	11.75	1.88	1.87	16.	15.9	100.9	-113	Bath	
	" 24	980	24.	13.30	2.16	2.09	15.6	15.05	103.		" "	
" 25	1340	16.	13.26	2.00	1.94	15.7	14.9	106.5	" "			

EFFECT OF BATHS ON METABOLISM AS SHOWN BY ANALYSIS OF THE URINE. — Continued.

	1902.	CC. in 24 ^h .	Sp. Gr. 1.0—	Total N ₂ gms.	Total P ₂ O ₅ gms.	Total S O ₂ gms.	Ratios.			Gain or Loss in Weight, gms.	Days of Bath.	Remarks.	
							100 N ₂ :						100 SO ₂ :
							P ₂ O ₅	S O ₂	P ₂ O ₅				
Man. 40 years.	Mch. 26	1240	17.5	11.42	1.98	1.78	17.3	15.6	111.1	+ 87	No Bath	Total water in food and drink, about 3900 cc.; total N ₂ , about 14 gm.; total fuel value in calories, about 2250.	
	" 27	1500	16.	12.75	2.13	1.95	16.7	15.3	109.2	+ 142	" "	Bath:—Hot air, 174° 5 m.; circular, 95°, 20 sec., 36 lbs.; fan, 85° 76°, 25 sec., 33 lbs.; jet, 65° 5 sec., 30 lbs.	
	" 28	4165	16.	38.40	6.06	6.60	15.7	15.1	104.1	+ 294	Bath	Daily diet:—Tomato soup, 350 cc.; steak, 100 gm.; breast of chicken, 75 gm.; boiled ham, 50 gm.; potato, 400 gm.; bread, 175 gm.; eggs, 140 gm.; butter, 75 gm.; corn starch, 300 gm.; 1 apple; 2 bananas; milk, 900 cc.; water, 1135 cc.	
	" 29	1340	17.	12.61	1.98	1.89	15.7	15.	104.8	— 85	" "	Total water in food and drink about 3900 cc.; total N ₂ , about 19 gm.; total fuel value in calories, about 2808.	
	" 30	1640	19.	12.25	2.31	1.85	18.4	15.1	119.9			Bath:—Hot air, 190° to perspiration; circular, 98° 50°, 1 m., 30 lbs.; jet, 70° 30 sec., 30 lbs.; fan, 60° 23 sec., 30 lbs.	
	" 31	3960	30.	11.73	2.16	1.76	18.4	15.	122.4			Daily diet:—2 kilos* liquid food with 300 cc. water extra.	
	April 15	2125	20.5	20.11	3.76	3.87	18.7	16.8	110.9		No bath		
	" 16	1650	21.5	18.66	3.73	3.08	20.	16.5	121.		" "		
	" 17	5895	19.5	58.76	11.19	9.637	18.	15.8	117.		" "		
	" 18	1450	23.	19.53	3.62	3.21	18.5	16.4	112.9	+ 307	Bath		
Man. 27 years.	" 19	1860	19.	19.9	3.81	2.97	19.1	14.9	128.4		" "		
	" 20	1640	22.	20.70	3.69	3.42	17.7	16.4	108.		" "		
	" 20	4950	22.	60.23	11.13	9.60	17.7	16.4	108.		" "		
	Dec. 13	1260	28.	19.7	4.77	3.87	24.2	19.6	123.4		No bath		
	" 14	1360	24.	19.96	4.92	3.89	24.7	19.2	128.5		" "		
" 15	1280	28.	18.51	4.05	3.50	23.6	19.9	129.1		" "			
" 16	1100	27.	17.98	4.06	3.50	23.6	19.9	129.1		" "			
" 16	5000		76.15										

* Liquid food:—500 cc. whole milk; 300 cc. Cream (18-22% fat); 450 gm. Eggs (white and yolk); 50 gm. Sugar; 300 gm. Horlick's Malted Milk; 5 gm. Salt (75 cc., or a 10% vol.); water enough to make 5 liters. This contains about 19 gm. N₂, 3.76 gm. P₂O₅ and 3.70 gms. S O₂.

EFFECT OF BATHS ON METABOLISM AS SHOWN BY ANALYSIS OF THE URINE.—Continued.

	1902.	CO. in 240.	Sp. Gr. 1.0—	Total N_2 gms.	Total P_2O_5 gms.	Total SO_2 gms.	Ratios.				Gain or loss in weight, gms.	Days of Bath.	Remarks.
							100 N_2 :		100 SO_2 :				
							P_2O_5	SO_2	P_2O_5	SO_2			
Man, 37 years.	Dec. 17	1360	24.	18.26	4.59	3.56	26.1	19.4	129.	129.		Bath	Bath:—Hot air, 100°, 5 minutes; circular, 98°-100°, 45 sec., 25 lbs.; fan, 65°, 15 sec., 25 lbs.; jet, 76°, 10 sec., 25 lbs.
	" 18	1325	25.	17.88	4.57	3.43	26.5	19.2	133.	133.		"	
	" 19	1050	29.	18.02	4.14	3.03	23.9	19.8	116.	116.		"	
	" 20	1040	27.	17.77	4.12	3.13	24.2	18.7	129.	129.		"	
	" 20	1106		71.16								"	
	1903.												
	Jan. 9	1700	16.	15.13	3.06	3.97	20.2	19.6	103.3	103.3	-40	No bath	Daily diet:—2 kilos liquid food with 900 cc. water extra.
	" 10	860	20.	14.8	3.43	3.11	23.1	20.1	110.	110.	-100	"	
	" 11	1405	19.	15.6	3.70	2.93	24.5	18.9	137.	137.	-150	"	
	" 12	1185	25.	45.48	10.57	9.06						"	
" 13	1425	19.	15.6	3.74	3.24	24.	20.8	115.	115.	-140	"		
" 14	1110	24.	16.4	3.46	3.23	21.1	20.	121.4	121.4	+160	"		
" 14	9870		47.6	10.99	9.65					+400	"		
" 15	1400	20.	16.13	3.86	3.23	23.9	20.	119.	119.	-200	Bath	Bath:—Circular, 97°-100° 1 m., 80 lbs.; fan, 60°, 15 sec., 30 lbs.; jet, 70° 15 sec., 30 lbs.	
" 16	1450	23.	16.61	3.56	3.11	23.2	18.7	124.	124.	-100	"		
" 17	1670	17.	16.92	3.75	3.39	23.2	20.	110.6	110.6	+200	"		
" 17	4510		49.96	11.47	9.73						"		
" 18	985	26.	15.42	3.74	3.13	24.2	20.6	118.	118.	+200	No bath		
" 19	1570	19.	16.45	3.71	3.11	23.5	18.8	119.	119.	-40	"		
" 20	1125	22.	14.57	3.96	3.07	26.5	20.6	123.7	123.7	+260	"		
" 20	9690		46.77	11.40	9.36						"		
Man, 23 years.	Jan. 26	1025	24.	14.81	3.38	2.51	22.2	19.	117.	117.	+200	No bath	Daily diet:—2 kilos liquid food with 900 cc. water extra.
	" 27	1945	16.	14.22	3.43	2.72	24.1	19.1	126.	126.	-40	"	
	" 27	2570		29.08	6.61	5.63					+730	"	
	" 28	1600	16.	16.22	4.16	3.17	25.6	19.5	121.	121.	-235	"	
	" 29	1275	23.	16.95	3.64	3.24	21.6	19.2	112.	112.		"	
	" 29	2375		33.10	7.90	6.41						"	
	" 30	1100	25.	16.54	3.74	2.93	22.6	17.7	127.	127.	+450	Bath	Bath:—Hot air, 100°, 5 m.; circular, 98°-100°, 45 sec., 25 lbs.; fan, 70°, 15 sec., 25 lbs.; jet, 80°, 10 sec., 25 lbs.
" 31	1470	18.	15.86	3.63	3.10	24.2	19.6	124.	124.		"		
" 31	2550		32.37	7.97	6.03						"		

EFFECT OF BATHS ON METABOLISM AS SHOWN BY ANALYSIS OF THE URINE.—Continued.

	1908.	C.C. in 24 h.	Sp. Gr. 1.0—	Total N ₂ grms.	Total P ₂ O ₅ grms.	Total S ₂ O ₃ grms.	Ratios.			Gain or loss in Weight, grms.	Days of Bath.	Remarks.	
							100 N ₂ :						100 S ₂ O ₃ :
							P ₂ O ₅	S O ₂	P ₂ O ₅				
Man. 57 years.	Jan. 27	1550	80.	16.76	8.94	8.13	23.4	18.7	136.	-60	No bath	Daily diet:—3 kilos liquid food with 900 cc. water extra.	
	" 28	1385	19.	15.96	8.71	8.12	23.2	19.5	119.	+280	" "		
	" 29	1475	19.	15.93	8.83	8.12	24.1	19.6	123.7		" "		
	" 30	1590	80.	16.49	8.89	8.06	23.5	18.7	126.	-170	Bath	Bath:—Circular, 98°-99° 45 sec., 20 lbs.; fan, 70° 15 sec., 20 lbs.; jet 85° 10 sec., 20 lbs.	
Woman. 41 years.	Feb. 1	1375	80.	15.82	8.69	8.20	23.3	20.2	115.	+60	" "		
	" 7	1625	14.	10.42	2.54	2.06	24.4	20.	122.		No bath	Daily diet:—1288 grms. liquid food with 900 cc. water extra.	
	" 8	920	24.5	10.15	2.39	2.07	23.5	20.4	115.		" "		
	" 9	1550	14.	10.42	2.26	2.03	21.7	19.5	111.		" "		
Man. 60 years.	" 10	1260	16.	10.05	2.06	2.25	20.5	22.4	91.6		Bath	Bath:—Hot air, 190°, 5 m.; circular, 90° 20 sec., 18 lbs.; fan, 85°-80° 20 sec., 20 lbs.	
	" 11	1215	18.	10.92	2.43	2.15	22.2	19.7	113.		" "		
	" 12	920	19.5	9.92	2.30	2.03	22.2	21.	110.		" "		
	" 18	1975	18.	16.3	8.95	8.22	24.2	19.8	122.	+300	No bath	Daily diet:—3 kilos liquid food with 900 cc. water extra.	
	" 19	1500	20.	14.07	8.60	2.95	25.6	20.2	126.	-400	" "		
	" 20	1610	18.	14.11	8.86	2.77	27.3	19.6	140.	+300	" "		
	" 21	1525	18.5	13.87	8.81	2.80	27.6	20.3	126.	+100	" "		
	" 22	1625	18.5	16.41	4.14	3.06	26.2	19.	124.	+600	" "		
	" 23	1325	24.	15.66	4.04	2.59	25.9	18.4	140.	+400	" "		
	" 23	1475		45.96	11.69	8.77					" "		
	" 24	1890	19.	16.75	4.16	3.24	24.9	20.	126.	+200	Bath	Bath:—Hot air, 190° 4 m.; circular, 98°-99° 45 sec., 20 lbs.; fan, 85°-75° 20 sec., 20 lbs.	
	" 25	1975	17.	14.46	3.79	2.93	26.2	20.2	129.	-400	" "		
" 26	1825	18.5	15.70	4.07	3.16	26.	20.1	128.	+160	" "			
" 26	2590		46.83	12.02	9.43					" "			

also a more permanent secondary effect on the blood-vessels as is shown by a quicker and more perfect reaction with continued use of the baths.

Theoretically there should be an effect on the internal organs in the way of increase of activity from periodical flushing. This may be so, though the metabolism experiments reported by me do not show it.

The effect of these baths on the mind of the patient should not be overlooked. He has not the slightest doubt that something is being done for him. No one ever told me that the baths had no effect, while complaints of their severity have not been uncommon. Patients always speak of them respectfully. A former patient with the delusion of demoniacal possession, who had improved while taking baths, wrote me "Your baths are excellent to reduce cerebral excitement. You can't fight the devil with fire,—he is in his element there,—but he is mortally afraid of cold water."

It is something for the melancholy patient to go to the gymnasium daily for a bath and gentle exercise, with the idea thus kept prominent that he is sick and that efforts are being made for his recovery. Far better is the morning spent in this way than in sitting about the ward, lamenting his terrible condition or brooding over imaginary woes.

We have given baths to all forms of mental diseases ; many who have taken them have recovered, but they were all of the forms of diseases generally recognized as recoverable.

FEIGNED INSANITY: MALINGERY REVEALED BY THE USE OF ETHER.¹

By CHARLES G. WAGNER, M. D.

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On the morning of the 14th of January 1902, William H. Ennis, 32 years of age, a police officer in the Borough of Brooklyn, city of New York, killed his wife, Mary A. Ennis, by shooting her with a revolver. He then went to a small hotel in the neighborhood, engaged a room, went to bed and was soon asleep. An hour or two later he was arrested and lodged in jail. He was indicted by the Grand Jury for murder in the first degree, was tried in the May following, convicted of the crime as charged and sentenced to death during the week beginning July 7, 1902. His case was appealed but the sentence was affirmed and December 14, 1903 was finally designated as the date of execution.

During the trial it was shown that Ennis had been a police officer for eight or nine years; that he was a hard drinker and possessed a bad temper; that he was married in November 1900 and had boarded with his wife's mother for about four years prior to his marriage; that after his marriage he frequently came home intoxicated and was abusive in language and conduct toward his wife who finally left him about four months before the commission of the crime with her three weeks old baby, and obtained a legal separation. A large amount of expert medical testimony was offered by the defense in the attempt to show that the accused was suffering from paranoia; that he was delusional, epileptic and demented, and that he was unable to walk on account of lateral spinal sclerosis, all of which conditions were declared absolutely incurable. Other testimony by well-known experts was offered

¹ Read at the annual meeting of the American Medico-Psychological Association at St. Louis, May 30 to June 3, 1904.

by the prosecution to show that the accused was feigning. In court Ennis was incoherent and answered questions irrelevantly or not at all. He appeared unable to walk without assistance or to stand erect with his feet squarely on the floor. When he attempted to walk, at each step as he rested his weight to some extent on the ball of his foot, a violent coarse tremor agitated the entire leg. These abnormal mental and physical phenomena Ennis exhibited throughout his trial, and, after conviction, on the way to the state prison at Sing Sing, N. Y., where he was confined until his execution.

From the testimony of the prison physician at Sing Sing, the warden of the prison and the keepers who came in daily contact with Ennis, it appears that throughout the whole eighteen months during which he was confined in the prison, he manifested little if any interest in his surroundings or in outside matters; rarely asked questions and when spoken to usually replied incoherently or not at all. His expression and manner impressed the prison officials as indicating dementia or imbecility, although they were somewhat suspicious that he might be feigning. During the entire period of his incarceration Ennis was never observed standing or walking without assistance; at all times he appeared to be unable to sustain his weight with his feet squarely on the floor, but when supported on each side he could walk or drag himself along on the balls of his feet, and while doing so his legs were invariably violently agitated by the coarse tremor previously referred to. As the time for execution approached the warden of the prison being in doubt as to Ennis' mental condition, requested the Governor to appoint a commission to examine him. Governor Odell appointed as such commission Dr. George A. Smith, medical superintendent of the Manhattan State Hospital at Central Islip, N. Y., Dr. Daniel H. Arthur, medical superintendent of the Gowanda State Hospital at Gowanda, N. Y., and the writer. On the 1st of December 1903, the commission met at the prison and after careful study of the records of the case examined Ennis. The prisoner was brought from his cell by two keepers to the office of principal keeper Connaughton. As he entered the office he was in great agitation. His legs, and to a less degree both arms, trembled violently. He appeared unable to walk, but apparently tried to put his feet forward step by step as the officers

supported him into the room. Apparently when he bore but little weight on the balls of his feet the muscular tremor of his legs became so great that he would have fallen if he had not been supported. He appeared unable to straighten his legs so as to bring his heels to the floor. When seated in a chair the tremor subsided and his mental agitation became less pronounced. The expression of his countenance was idiotic or imbecile and he appeared not to know where he was or to realize the nature of the questions that were put to him. When asked his name he made no response until the question was repeated many times, and then only when spoken to sharply, he said, "Ennis." When asked his first name, after considerable delay he said, "William." After being asked many times how old he was, he said, "35" which was not correct, his age being 33. No further answers could be drawn from him during the examination, but when asked if he had ever received any injury to his head, he nodded quickly in the affirmative and pointed to a spot on his head where an old scar was visible. When asked why he trembled, he made no reply, but to the question, "Are you afraid?" he immediately laughed and shook his head as if desirous of conveying the idea that the tremor was due to disease and not to fear.

Ennis frequently laughed during the interview in an imbecile manner and almost continuously moved his lips as if whispering to himself, but no sound of speech could be heard. He continually looked about the room with a vacant stare. At the close of the examination, when removed from the office to his cell he dragged his feet in the same manner as when entering, and exhibited the same tremor of the legs and arms.

On the 3rd of December—two days later—Dr. Smith, Dr. Arthur, and the writer again visited the prison and saw Ennis. He was brought into the office by two keepers. His countenance wore the same imbecile expression and his gait was unchanged, but when questioned he manifested slightly increased intelligence. He gave his name more promptly and when asked about the injury to his head, he immediately raised his hand to the vicinity of the scar and said "Doctors did that." When asked where he was, he replied, "In a hospital," and said that Doctors brought him there. He did not seem to realize that he was in prison, that he had committed a homicide, or that he had ever had a wife. His

hearing was tested and found good. His pupils reacted promptly to light and distance. Reflexes were normal except the knee-jerk which was slightly increased. When shown different colored worsteds, he called red black and yellow red, but a few moments later when shown yellow again he appeared unable to say what color it was. When tested as to taste he answered promptly and correctly when given sugar, but shook his head when asked to tell what salt, acetic acid, and bromide solutions tasted like. A variety of other tests were made and although Ennis showed somewhat more intelligence than on our first visit, he would not admit any knowledge of his crime. The examination lasted nearly two hours, after which Ennis was returned to his cell, two keepers supported him on his way to the elevator, and the same tremor of his legs was observed as when he was brought in. At this time the prison physician stated that after our first examination while visiting Ennis in his cell he had asked him why he did not answer our questions, to which he replied that he did not know who we were and so he was not going to talk to us.

The results of our examination had thus far been to a considerable extent negative and, therefore, unsatisfactory. But owing to the contradictory character of the testimony at the trial and the irregularity of the alleged symptoms during his imprisonment, the commission were all of the opinion that Ennis was malingering, notwithstanding the absence of conclusive proof to sustain their convictions. It then occurred to the writer that an anaesthetic might be of use in obtaining the desired evidence—the idea being that if Ennis were malingering the fact would become patent when all voluntary and purposeful action should be in abeyance; accordingly, the commission met at the prison on December 8th for the third time. The prisoner was again examined. His expression of countenance, manner, gait and general appearance were unchanged. He was taken to the hospital operating room, placed upon the table and ether was administered. He made no resistance and although his breathing was observed to be shallow he was soon apparently quite unconscious, but when taken from the table and with the assistance of two keepers made to walk he quickly revived and exhibited the same phenomena of gait, and the same expression of countenance as at the previous examinations.

In a few minutes he was again placed upon the table and ether

administered until his muscular system appeared relaxed and consciousness was again apparently gone, but on being brought to his feet, although it was evident his mental faculties were somewhat clouded, his gait and countenance were unchanged. After a short delay Ennis was placed on the table for the third time. He made considerable resistance and declared he would not "take any more of that stuff," referring to the ether. Resistance was overcome and the ether administered until complete unconsciousness and thorough muscular relaxation were obtained. Just before this degree of anaesthetization was reached Ennis became talkative, profane, and abusive; his voice was loud and strong, and his language coherent, forcible and expressive; whereas previously he had talked but little and always in a low tone. While still profoundly unconscious he was lifted from the table and stood upon his feet. As consciousness began to return, with a little assistance he walked across the room without difficulty or muscular tremor, and at each step placed his foot squarely upon the floor. He walked out into the corridor to the elevator and on reaching the ground floor walked to his cell without assistance. The plea of lateral spinal sclerosis was thus disposed of.

The change in the character of Ennis' speech during anaesthetization, his coherent, loud, profane language which was evidently a near approach to his normal expression, and the elimination of the alleged spinal disease satisfied the commission that the pretense of insanity was without foundation and report was made to the Governor accordingly.

On the day following the last examination Ennis was visited by the prison physician, but he would not talk beyond saying that he was sick and wanted to sleep. The next morning, however, he was very communicative. When he saw the prison physician approaching he immediately called out "I had all you fellows guessing all right and you never would have caught me only for the ether." He said he had been "under an awful strain for a year and a half" and that he would "rather go to the chair than go through the same experience again." He talked freely about the murder and put the blame for the crime on his wife's mother. He talked intelligently about his whole life, admitted the crime and had no hope of escaping the electric chair. He said that no physician or lawyer had posted him on how to act or walk, but

that one day while standing at his cell door, before his trial and after the alcohol was pretty well eliminated from his system, his legs trembled so much that he could not stand and keep them quiet. This trembling suggested the idea, and all that he had to do, he said, was to exaggerate the shake somewhat and put on a "few fine touches."

The prison physician stated in a letter to the writer after the execution that Ennis proved to be quite a sensible fellow in his conversation, and that he went to the chair without showing any fear; in fact, that he was as brave a man as he had ever seen under similar conditions.

RECONCILIATION OF THE DISPARITY BETWEEN HOSPITAL AND ASYLUM TRAINED NURSES.¹

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The word *asylum* in the caption is used merely to designate the distinction between a hospital for the treatment of general diseases and a hospital for the care of mental diseases. At the present time any affection of the mind is considered a disease and any institution that undertakes the care and study of mental disease in all its manifold relations psychical, physiological and pathological, a hospital.

A paper dealing with the training of nurses cannot claim novelty, at most it must be a re-presentation of a subject always of interest to the practical psychiatrist. The chief secret of successful care of the insane lies in the securing of proper nurses. The importance of this desideratum in any hospital is the writer's apology for saying anything on a subject so thoroughly exploited.

No one will interpose objections to the training of nurses in institutions for the insane. No alienist who has had experience would ever revert to the old method of having untrained attendants upon the insane any more than the general hospital superintendent would wish to manage his hospital with the old fashioned nurse who was physician's helper, nurse if she possessed the temperamental qualifications and ward maid combined. Estimable as were many of these women, faithful and devoted to their work as they may have been, still the modern trained nurse in the general hospital is so vastly superior by reason of her intelligence as to compel conviction.

In hospitals for the insane, while the same sort of conviction exists, still there is an admitted difference, a sort of tacit feeling that

¹ Read at the meeting of the American Medico-Psychological Association at St. Louis, May 30 to June 3, 1904.

the two kinds of nurses do not stand on quite the same solid foundation. The public as well as the nurses themselves often have the feeling that the asylum nurse does not possess quite the same qualifications as her sister nurse trained in the general hospital. How are we to make the training and experiences of the two classes of nurses more nearly equivalent? Are we to try to do it all? Or is it better to admit that both classes should remain specialized, each confining themselves to their own individual work?

Two factors underlie the establishment of training schools for nurses:

First, the better care of the patient, and secondly the utilitarian purpose on the part of the hospital to secure efficient nursing at a moderate price. In the general hospital the nurse serves her course of two or three years and then is expected to leave and enter upon the practice of her profession outside the hospital, unless perchance she may be one of the limited number selected for a special position of trust in it. In the hospital for the insane there is a little uncertainty as to the future of the graduate nurse owing to differences in methods of training and in conception of the purpose and scope of the asylum training school by the managers of these institutions.

In the early days of asylum training schools many thought that instruction should be limited to the nursing of mental disease, and that strict specialization should be the dominant principal. By this means it was hoped that greater permanency might be secured among asylum nurses. When, after a few years, it was found that these trained nurses did not average as long an institution residence as did many of their untrained predecessors, criticism was not infrequently heard that the whole scheme of asylum training schools was a failure. These unbelievers said that the old attendant who was faithful and who remained in the institution many years was more desirable than the trained nurse who as soon as her course was completed became anxious to leave the service and try her hand in new work outside the institution. In their minds training had only served to make the nurse restless and more ambitious. The hospital after two years hard work lost its pupil just at the very time when it was hoped that she might become most efficient. This criticism, however, is specious and not based on the right principle. The easiest way is not always

the most desirable. The results that are secured without hard work and with little friction are not always the most satisfactory or enduring. It must be taken for granted that young women with the brightest minds and the greatest aptitude for mental nursing will naturally seek new fields for their ambition after their training is finished. A few may remain in positions of trust in the service, but it must be expected that the majority will, by very reason of the mental impetus initiated by their training, seek larger fields in which to test their capacities. But this frequent changing of nurses, aside from the additional work imposed upon the hospital staff, is not to my mind particularly objectionable. The infusion of new blood into the service, the successes of those who have preceded, the ever constant stimulus of good example tend to develop an esprit de corps which more than compensates for the shortness of the service.

Admitting then the fact that changes must occur yearly as classes graduate, that training in the hospital for the insane does not mean any greater permanency of individual service than corresponding training in the general hospital, the questions arise, shall we specialize our instruction in the hospital for the insane? Shall we maintain the separation between the two classes of nurses? Or shall we endeavor to draw them nearer together making the standard and experiences of the one more nearly equivalent to the other so that a trained nurse whether graduated from general hospital or asylum training school will stand on similar ground not only in her own estimation, but in that of the community as well?

It must be admitted that in securing nurses for training, the hospital for the insane is handicapped. Few young women in seeking a nurse's education would on first thought select an asylum in preference to a general hospital. First the character of the disease does not appeal to the ordinary individual, and secondly the demand for mental nurses in the general community is not sufficiently great to secure constant employment. In order that young women of intelligence and in sufficient number may be secured it is necessary for the asylum to provide something more than special instruction in mental nursing. The institution must enlarge its training so that the graduate nurse will feel competent to undertake the profession of general nursing. Is this broader instruction

to be attained by affiliation with some general hospital, the nurses exchanging places with one another so that the experiences and instruction of both will be equivalent? If this method is not practicable how can the disparity between the two classes of nurses be reconciled?

If an exact interchange of nurses could be made between some general hospital and an asylum, much might be said in favor of such affiliation. Unfortunately this interchange is not very practicable. The majority of nurses do not feel that they can afford the time necessary for courses of instruction in two hospitals. Very rarely are general hospitals and asylums located in such proximity and with such close relationship as to render an interchange of nurses feasible. Finally, experience has shown that, while asylum graduate nurses are frequently willing to enter general hospitals and do excellent work in these institutions, rarely does it occur that graduates from general hospital training schools are desirous of entering asylums. Those who would make this change for purely academic reasons are very few in number.

In a way, too, the training and practice in a general hospital unfits a nurse for the special work in the hospital for the insane. The nurse in a general hospital, accustomed to rely on the patient's mental integrity and personal responsibility, merely follows the routine directions prescribed by the visiting physician and the rules of the hospital. The nurse in an asylum is constantly being taught that the patient's judgment and responsibility are impaired and that her own judgment must ever be tactfully substituted for that of the patient. Tact and self-control become cardinal virtues in the asylum nurse. The almost constant exercise of judgment, tact and self-control develop a patient forbearance that is of inestimable value in the care of the sick. The graduate nurse from the general hospital finds all the requirements so changed upon entering the asylum that adjustment to the new conditions becomes extremely difficult. Most general hospital nurses, undertaking special training in an asylum, become impatient, see nothing to do and grow weary under the constant demands made upon their nervous energy.

Close affiliation with a general hospital being impracticable, what course is desirable for the asylum training school? Personally the writer believes that the best results can be attained by the

adoption of a comprehensive course of training that will fit graduates for general as well as special nursing outside the hospital. It may as well be admitted that graduates will not remain long in the asylum. Nearly all will desire to practice their profession outside the institution and ought not to be discouraged in their ambition. Of these a few will from time to time be glad to return as head nurses and become all the more valuable by reason of their larger experience in private nursing. The moral effect upon the community of these asylum graduate nurses is excellent. Their services do much to lessen the old popular superstitions concerning insanity, and remove the prejudices against asylums. The public through their presence come to realize that insanity is a disease, that the asylum is a hospital, and that nurses are as essential there as in the general hospital or for the care of any other illness.

That the course of instruction in the asylum training school may be made the equivalent of that of the general hospital, every facility for clinical drill must be utilized. This is to be accomplished in various ways. One of the most important agencies for this purpose is the hospital building not only for the acute psychoses, but for the hospital nursing of those patients who are sick in bed. Too often does it happen that the sick in bed in asylums are scattered throughout the entire institution. Such cases, as far as is possible, should be brought together in the hospital building. This building should be constructed on the lines of the general hospital but with sufficient elasticity to admit of some individualization in the treatment of mental conditions. There should be a common ward for those entirely cared for in bed, single rooms for patients requiring isolation, these wards and rooms being provided with every appliance that experience has demonstrated desirable in the nursing of patients in the general hospital. The "hospital idea" so long insisted on by Dr. Cowles should be the dominating feature of this building. It is most desirable that all new cases, particularly the acute psychoses, should be admitted into the hospital building, receive their first examination there, and the subsequent clinical study so essential in the recent case. The important first impression on the patient is a favorable one. Whatever his own morbid ideas may be the *hospital* rather than the *asylum* impression is the striking feature in his new environment. Of almost equal emphasis is the same impression upon the nurse. The more she

becomes imbued with the hospital spirit the more useful will she be to the institution and the better equipped for the general practice of her profession. The hospital building should also be provided with wards for the physically sick and infirm demented patient. No cases require more skillful nursing than these and none better tests the capabilities of a good nurse. Many of the Scotch asylums have hospital buildings constructed and managed on the same lines as the general hospital with what seemed to the writer most desirable results.

Furthermore, this hospital building should be at a little distance from the main group though connected by corridor or subway. The impression of detachment will be secured while transfers to and from the main buildings can be made under cover. Connected with the building should be a surgical operating room equipped with every modern appliance. In a large hospital for the insane occur many surgical cases. Without a suitable operating room many cases requiring surgical measures are either treated in a temporizing way, or are sent elsewhere. All such work should be done in the hospital so that the nurses will derive experience in the preparation of the room and patient as well as in the management of dressings and instruments. Modern asepsis should be taught here and there is no good reason why the nurses should not receive as good drill in this subject as those in a general hospital. The occasion for abdominal surgery not infrequently arises in hospitals for the insane and should always be improved. Specialists are always available outside the institution and can readily be secured for assistance when necessary, provided the asylum possesses the requisite building and equipment. The surgical operating room should be central to the wards of the hospital building and should be adjacent to a large passenger elevator so that patients from the wards can easily be brought to the room. Every case requiring surgical measures either in the way of operation or dressing should be brought here where absolute asepsis can be taught and practised. Too often these steps are neglected because of lack of suitable place and appliances. With the proper equipment the medical staff are given healthy stimulus and the nurses taught correct technique.

The hospital building should have wards for both sexes conveniently separated by such administrative apartments as are

necessary. A most important feature is the management of this entire building, which should be vested in a head nurse of experience, preferably a graduate of the hospital with a subsequent experience in a general hospital or general nursing outside the hospital. This should not be a divided management, partly male and female. The hospital building should be absolutely under the care of the head nurse and her assistants. The nurses should feel that they are in control. Division of responsibility between male and female attendants is not productive of good results but leads rather to friction and irritation.

The care of the male patients and male wards in the hospital building should devolve on women nurses as far as is possible, with such assistance from orderlies as is necessary, the methods being similar to those prevalent in general hospitals. It is the writer's conviction from his own somewhat limited personal experience and from his observations where the experiment has been tried that male insane patients sick with physical or surgical infirmity receive better care from women nurses than from male attendants, that male patients with few exceptions appreciate such care, and that with proper supervision no objectable unpleasantness to the nurse arises. Finally, rotation of service should prevail in every institution for the insane as in general hospitals. Every nurse should serve on both day and night duty in the hospital building as well as in the wards of the institution. Too long service in any one ward wearies the active nurse and intensifies the ennui in the unambitious nurse. The nurse who is not willing or is not able to serve in any and every ward is not imbued with the proper spirit and ought not to be entitled to graduation. The reactionary effect upon the nurse of rotation of service is excellent. Especially valuable is the nursing of both male and female patients in the hospital building. Service in these wards should be the goal to which each junior nurse should look forward.

These desultory remarks by no means cover all that might be said upon the subject of a hospital building. They are merely intended to emphasize the necessity for such a department, to demonstrate its relation to the nursing service of the institution. As an educational aid to the nurse, as a most important agent in lessening the disparity between asylum and general hospital trained nurses, I believe the hospital building is a *sine qua non* in any institution for the insane undertaking the training of its nurses.

In addition to the hospital building there are other agencies that increase the efficiency of the asylum trained nurse, the most important of which are drill in the keeping of clinical notes, practical diet kitchen service, dispensary work, the preparation of surgical dressings, the administration of baths and massage, and especially insistence on a high standard not only in the passing of examinations but in efficient work at the bedside and in the management of patients. In these especial agencies every asylum possesses specific means for furnishing a drill and mental discipline equivalent to that of the general hospital. One of the most desirable qualifications of a trained nurse is the power of quick clear observation, one of her most important requirements is the ability to concisely report what transpires in the sick room. Nowhere in the whole field of medicine is better opportunity afforded for exercise of the powers of observation than in the wards of a hospital for the insane. A patient does not talk, has all sorts of vagaries, refuses food; it remains for the nurse to ascertain what is going on in this patient's mind, and in a few brief clinical notes to state not only what the nurse has done but what the patient's thoughts and conduct have disclosed.

It is needless to say that diet kitchen service can be made just as effective in the asylum as in the general hospital. That this may be done, a well equipped diet kitchen with adjacent supply room should be provided. A teacher resident in the hospital or periodically engaged from some metropolitan cooking school should give regular courses of instruction in sick room cookery. Each nurse should serve so many weeks in the diet kitchen executing orders for sick diets given by the physician. In this way the diet kitchen is not only of practical value to the nurse but profitable to the hospital.

Dispensary drill can be made equally efficient. Each nurse serves a stated time in the drug room familiarizing herself with weights, measures, pouring of drugs and such compounding as is required of a nurse. Similarly in the preparation of surgical dressings, in the making of the various aseptic solutions, care of instruments, preparation of the operating room and table the asylum nurse should be given such thorough drill in the hospital building that all these duties will become a second nature to her so that she will

perform them with the same facility and precision as the soldier executes his manual of arms.

In the administration of the various kinds of baths and massage the asylum offers especial advantages. Hydrotherapeusis and massage are of great value in many cases of mental disease and should form an important feature in the nurses' training. The facilities for these measures should be fully equivalent to those offered in the general hospitals.

The maintenance of a high standard for graduation is especially important. Efficient work in the wards, facility in the management of insane patients should be regarded as essential for graduation as mere intellectual proficiency. Nurses not possessing the requisite tact, judgment and self-control should be eliminated from the service before the senior year is reached. The moral value to the nurse of these qualifications is so great that I believe that any young woman proficient in the care of the insane is quite sure of success in the practice of general nursing. Experience has demonstrated that the majority of asylum nurses after graduation have been commended for the possession of these very virtues that are the outgrowth of the mental discipline incident to successful care of the insane. There is good reason, therefore, why young women not possessing the mental traits essential to good asylum service should be eliminated. Those that remain prove doubly valuable, doing credit to themselves and the hospital that graduates them.

The hospital for the insane located in or near a large city possesses peculiar advantages over one more remotely situated. It is possible for the asylum near a city of some size to establish relationship with some dispensary, or better still, a district nursing association. Most large and many small cities maintain district nursing associations which not only are a most worthy charity but furnish valuable material for practical nursing. As ordinarily managed these associations undertake nursing in the homes of the poor, furnishing a nurse for a few hours each day in such families as could not afford a nurse the entire time. The service is quite varied, including confinement cases, non-contagious fevers, surgical dressings, many emergency cases and the care of the sick room. Not even a general hospital offers a better drill than a well appointed district nursing service. The personal adaptation of the nurse to varying conditions in the homes of the poor, the manage-

ment of the patient and the sick room with meagre resources at command is a far better test for the nurse than the well equipped hospital.

The official connection of the New Hampshire State Hospital with a local district nursing association has proved such a benefit to the training school of the institution that brief mention of the fact seems pertinent. In 1900 a district nursing association was organized in the city of Concord. A graduate nurse from the Waltham Training School was engaged to inaugurate the work. In a few months owing to increased service it became necessary for the organization to engage an assistant nurse. Recognizing the abundance and value of the clinical material available the New Hampshire State Hospital entered into business relations with the association to furnish pupil nurses. At a later period upon the resignation of the head nurse the position was filled by a former graduate of the State Hospital whose training had been supplemented by a post graduate course in a New York city general hospital. The district nursing service soon proved such a worthy charity that a second pupil nurse became a necessity. At the present time two senior undergraduate nurses are rendering eight weeks service in the city under the direction of a former graduate of the hospital. From personal experience I can testify to the excellent variety and character of the work and the admirable discipline and training afforded the nurses. District nursing supplies exactly the kind of experience a nurse needs. It supplements the asylum practice, giving the nurse a practical training in obstetrics, fever and surgical work. This house to house nursing provides the same sort of experience for the nurse that dispensary district practice furnishes the young physician. It is of even greater value than ward nursing in a general hospital because of the ever varying environment and the test imposed upon the personal resources of the nurse. The quality of the service rendered by each nurse is a determining factor in her graduation. A nurse cannot receive her diploma whose district work is not satisfactory. Her work must pass the inspection and approval of (a), the numerous physicians whose cases are treated, (b), the Board of Visitors of the association who frequently visit the different houses making personal inspection and receiving comments from the various families and (c), the head

nurse who assigns the cases and has immediate control of the instruction and the work. The inspection is, therefore, sufficiently thorough to put each nurse upon her mettle, to insure efficiency and prevent slackness or neglect. The results have been so gratifying that I do not hesitate to recommend district nursing wherever practicable as a most valuable adjunct to the curriculum of the asylum training school. This service is a stimulus to the nurse and is a most potent factor in lessening the disparity between the general hospital and the asylum trained nurse.

Every asylum should have a Nurses' Home entirely detached from the main building. Such provision is in line with what general hospitals are doing for their nurses and tends to elevate the character of the service. The nurses are better prepared for their regular duties by the untrammelled recreation thus afforded them. A separate building suitably furnished and under the supervision of the head nurse dignifies the service and establishes a distinction between the nursing and the domestic departments. Absolute change is as essential for the special as for the general nurse. Asylums should follow general hospitals in the erection of nurses' homes. They are one of the agencies that lead to the securing of a more intelligent service.

The writer's purpose in presenting a paper on so familiar a topic will be fulfilled if discussion is awakened thereby, or the expression of new experiences is elicited from fellow-workers. Training schools for asylum nurses long ago passed the experimental stage. Greater intelligence in his nursing staff is the earnest desire of every asylum superintendent. The instruction afforded by the training school in so far as it induces young women of ability to apply for ward positions and develops those already in the service is fulfilling a most important mission. If by any means this training can be so broadened through the agencies enumerated as to make the asylum graduate feel that she is as well qualified for the general practice of her profession as the general hospital graduate, then the problem of securing desirable nurses in the hospital for the insane will be materially lessened.

A FEW REMARKS ABOUT OBSERVATION WARDS AND HOSPITALS.¹

By E. STANLEY ABBOT, M. D.,

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In the last few years so much has been said and written about psychopathic and observation hospitals that I feel that an apology is due for presenting on this subject a paper which contains so little that is new or original. The attempt some three or four years ago to induce the Boston City Hospital, of which I was at that time a subordinate officer, to receive into its wards cases of doubtful insanity and of delirium tremens brought the matter rather forcibly to my attention. Dr. Baldwin's paper before this Society in 1901 on the subject of the proper provision for such cases was inspired by the same movement, of which he was an active promoter. Most communities of any considerable size have to face this problem. In this country a few cities, such as New York, Brooklyn, Philadelphia, Pittsburg, Albany, and perhaps some others have made special arrangements to solve it. Three of these, New York, Philadelphia and Albany, I visited. It occurred to me that a few observations on the principal features in the actual working-out of the problem might be of interest to others as well as myself.

The class to be provided for is much larger than the title of Dr. Baldwin's paper indicates. The increasing differentiation or specialization of organized relief for various kinds of dependents leaves still a miscellaneous residuum of cases not yet adequately provided for in most communities. These residuals, as I shall call them for the sake of brevity, include not only the cases of doubtful insanity and of delirium tremens referred to by Dr. Baldwin, but also such conditions as sudden outbreaks of violence or

¹ Read before the American Medico-Psychological Association at St. Louis, May 30 to June 3, 1904.

excitement, suddenly developing puerperal insanity, epileptic or alcoholic or other convulsions or seizures, attempted suicides, persons found dazed or irresponsible in the streets, and persons so deeply intoxicated as to need medical observation. In this class should also be included those cases of undoubted insanity which are waiting for the necessary forms of commitment to be made out, a process requiring from a few hours to a few days in some communities. Most of these cases, except the last class, require more or less prolonged observation before they can be sent to the appropriate place of relief or care. They represent emergencies of greater or less urgency. In New York nearly 76 per cent of the residuals are found to be insane, a little over 14 per cent are not insane, and 10 per cent are cases of delirium tremens. In Albany over 61 per cent are acutely delirious or insane, 12 per cent are not insane, and over 26 per cent are cases of intoxication or delirium tremens. The data for Philadelphia were not available at the time of my visit. In Boston, of the cases falling into this category over 64 per cent are insane or epileptic, nearly 15 per cent are not insane, and over 20 per cent are cases of delirium tremens.

It is obvious that all these cases need medical observation. Most of them need general or insane hospital care, and many need it at once, without the delay necessitated by formal commitment. The protection of the community or of the friends of the patient occasionally requires the instant restraint of a patient. In the interest of the 12 to 15 per cent of the not insane (and perhaps of the 10 to 20 per cent of the delirium tremens cases) this restraint should be possible without certification of insanity or the disgrace of arrest by the police. These conditions cannot be well secured in the police stations or jails, nor yet in workhouses or almshouses, where such cases are sometimes sent. Whether they can be found better in general hospitals or hospitals for the insane will appear from a consideration of what is now being done for the residuals in this country and abroad.

Under the reform administration in New York the new management of Bellevue Hospital reorganized the working of the Insane Pavilion. The building, a separate pavilion, is unchanged at present. It contains two wards, one for men and one for women. Each consists of a long, straight, wide hall which is also

a day room, with single rooms for patients on either side, and bath, toilet, dining and serving-rooms. There is a dormitory room containing 5 beds for the sickest bed-patients. There is no way of separating quiet and well-oriented patients from the noisy and disturbing ones except by secluding the latter in their rooms. Each room has a sliding door with a peep-hole, the windows are guarded, the walls smooth and with hard finish. The wards are kept locked. There is no airing court for out-of-door exercise. Patients were formerly under the care of the visiting and house staff, whose invariable order was "sedatives and restraint s. o. s." Under the new régime there are three resident salaried physicians, all of whom have been assistant physicians in hospitals for the insane, and four consulting alienists and neurologists; the medical and surgical visiting staff may also be called in consultation. Since this change was made about 85 per cent of the "sedative and restraint s. o. s." orders have been found unnecessary. The men's ward is in the care of a woman supervisor who has had long insane hospital experience, and the orderlies are assigned to duty from the state insane hospitals for specified terms. The women's ward is in care of a head nurse and pupil nurses from the Bellevue Hospital Training School for Nurses—a concession to the training school. Patients are brought as emergencies by the police or by friends who claim that they are insane; or they are committed for 5 days on a charge of insanity by a magistrate upon application of friends; or committed by the superintendent of Out-Door Poor for 5 days for observation; or they may be transferred from the general wards of the hospitals. All intoxicated persons and cases of incipient delirium tremens applying are sent to the alcoholic ward of the hospital and not admitted at all to the Insane Pavilion—only well marked cases of delirium tremens are admitted, which accounts for the low relative percentage of such cases in New York as compared with the other cities. Patients stay very rarely as long as ten days, and only occasionally as long as a week; five days is the usual outside limit. If found on sufficient observation to be insane, they are committed to hospitals for the insane on certificate of two of the resident physicians; or they are discharged, or given in charge of their friends, or transferred on account of medical or surgical ailments to the appropriate wards

in the general hospital. Instruction to students is contemplated, but not yet begun.

The cases passing through this pavilion are numbered by thousands. Their stay is brief—three or four days. The pavilion is a mere distributing station from which the patients are sent to the appropriate place of relief as soon as that can be determined. During the time necessary for this determination they have good care under the direction of specialists in the kind of disease that afflicts the great majority of them. Among the plans for the new Bellevue it is contemplated to so change the construction of the pavilion as to allow the grouping of patients, in order that the quiet and inoffensive may not see the turbulent cases. If authority to hold the patient for observation against his will for five days without legal process were conferred on the department, thus making unnecessary the magistrate's commitment on a charge of insanity—a prejudice that is not always confirmed—some injustice to patients might be avoided. For purposes of study and of clinical instruction it would be advisable that patients remain a longer time under observation—say not to exceed two months. This however would necessitate a considerable enlargement of the accommodations, and for economic and administrative reasons might not be feasible.

At Blockley Hospital in Philadelphia the municipal almshouse and the general and insane hospitals are grouped together under one general management. There is no separate pavilion for the residuals, but four wards, two for men and two for women, in the building of the general hospital department are used for reception or detention wards. One of each is for alcoholic and delirium tremens cases, the other for the residual class and all cases committed to the insane department. The building is old, not originally intended for this use, and in many respects not now well adapted to the needs of this class. They are dormitory wards, without separate rooms for individual patients. They are kept locked, and have guarded windows. These wards are under the medical supervision of the salaried resident physician in charge of the insane hospital department. There are two regularly appointed visiting alienists, whose function is indicated below, and the medical and surgical staff can be called in consultation. The nurses are those of the general hospital. The patients are brought

by friends or by the police as emergencies, or on certificate of insanity signed by two physicians not connected with the hospital. After admission those not already committed as insane are seen by the two visiting alienists and if insane are by them certified as such. Those patients who are likely to require hospital residence for a month or more are transferred to the insane hospital department. Others are kept in the Detention Ward for one, two or three weeks and discharged from there or sent to appropriate wards of the general hospital. At the time of my visit data were not available concerning the number or kind of cases passing through the Detention Ward. Except in regard to the structural deficiencies, which prevent a segregation of the quiet from the disturbed observation cases, the general plan of care works satisfactorily.

The semi-public Albany Hospital has a pavilion a little removed from those containing the wards for the general medical and surgical cases, but connected by corridors with the main group of buildings. This Pavilion F has now been in operation for two years. It contains two locked wards of 17 beds each, all but four of which are in single rooms, the four being in a small dormitory room. There are three sitting rooms, and the whole ward is capable of being subdivided into smaller sections which allow segregation into small groups of three or four patients. Some rooms have guarded windows, plain smooth interior finish and sound-proof walls. Quiet and well oriented patients need not see noisy and turbulent ones. There is no closed court-yard for out-of-door exercise. The medical care of patients is under the close supervision of a visiting physician who has had several years' experience as assistant in hospitals for the insane. He visits the pavilion twice daily. A medical interne of the general hospital visits during his absence in case of need, and often with him. The medical and surgical staff of the hospital can be called in consultation. The nursing service is in charge of a supervisor who was trained in both insane hospital and general hospital training schools; the nurses are assigned from the hospital training school to service for a specified time in Pavilion F. There is but one orderly or male nurse in the pavilion. Almost no restraint or sedatives are used. Formerly the delirious patients in the general wards were given large doses of hyoscine and other

sedatives. Delirious patients from the general wards and any suitable patients, except such as may be brought by force or fraud, are admitted without commitment or other formality. This exception occasionally makes the pavilion fail to meet some of the most urgent needs of patients or their friends. No patient is kept who demands discharge except such as have been committed to a hospital for the insane and are waiting transfer. Patients are kept from a day or two to six months. Clinical instruction is given to students of the Albany Medical College.

This method of taking care of the residuals works admirably except in the case of such turbulent cases as require immediate hospital care but who are sufficiently oriented as to know their surroundings and refuse to go to or remain in the pavilion. The governors of the hospitals have refused to accept the authority to admit or hold a patient, even for a brief limited period of time, against his will, lest the hospital become liable at some time to suit for damages by some disgruntled patient, and to avoid the similarity to a hospital for the insane which such authority would imply. An appreciable number of patients have been declined for this reason. Only 331 patients have been admitted to Pavilion F, though Troy, Schenectady and other neighboring cities and towns have contributed as well as Albany itself. If the numbers should increase largely the system of having a visiting physician would probably prove inadequate and a salaried resident physician with insane hospital experience would become necessary. Since patients are kept for treatment it would be advantageous to have an out-door yard for the use of patients who might otherwise escape.

In Germany many municipalities have established what they call psychopathic wards, pavilions or hospitals, easily accessible from the more densely populated parts, admission to which is obtained with a minimum of formality. They are all constructed and organized as far as possible on the lines of a small hospital for all classes of the insane. Dr. Clark's concise and instructive paper before this society last year mentioned most of those in Germany and described especially the newest one at Kiel. We in America cannot afford to overlook this German movement when our municipalities are contemplating the proper care of their residuals.

It is clear from the foregoing descriptions that the nearer the

conditions approach those of the insane hospitals the more satisfactorily are the residuals cared for, and the better are their needs and those of their friends and the community supplied. If this be so, why are not the already established hospitals for the insane adequate and satisfactory?

The reasons are several. In the first place, many cases are emergencies occurring in the centres of population, while hospitals for the insane are remote, often requiring a journey of an hour or more by rail and a mile or more by carriage, with facilities ill adapted to the needs of an exhausted or excited patient. Then, admission is possible only on certificate of insanity or, in some states, also on the voluntary written request of the patient. Again, the time required to secure the legal form of commitment varies in different states from a few hours to a few days. Further, a considerable percentage of residuals (12 to 14 per cent.) prove to be not insane, yet many of them need observation to determine this fact who would not voluntarily commit themselves. It would therefore be necessary to put upon them the "stigma of insanity" as many regard it; it will be many years before public sentiment becomes so enlightened that it will not be so looked upon. And lastly, the average person shrinks from the words *asylum*, *insane*, *lunatic*, which enter into the names of almost all the hospitals for the insane. The sentiment may be unreasonable, but the fact remains that it is at present a potent factor in delaying the admission of patients to such hospitals, sometimes to the great detriment of the patient.

It may be asked why, especially in a large community, the wards of a general hospital are not adequate to meet the needs of this class. The reasons are many. The chief ones are briefly as follows:

1. General hospitals have not the authority to hold persons against their wills.

2. The wards of general hospitals are open, not locked, and a patient may easily escape. Also the nurses' attention and time are taken up by manual ministrations to the sick, and they cannot watch suicidal patients or those liable to escape.

3. The nursing force is not mobile enough to meet such emergencies as sometimes arise, requiring the presence of several

nurses to properly handle a violently disturbed patient, without neglecting other patients.

4. Noisy patients disturb the other sick patients, who need quiet. Sedatives are therefore necessary, and often these are bad treatment.

5. Violent or excitable patients would have to be kept in bed by means of restraint; this is often bad treatment.

6. Unless the residuals in the general hospital were under the care of a psychiatrist, their treatment would be directed by the general staff, to whom epilepsy, hysteria, delirium and insanity almost invariably mean large doses of sedatives and mechanical restraint—this is the experience at Bellevue and at Albany and accords with my own observations in the Boston City Hospital. It is often very bad treatment.

7. The general visiting staff has not the time, nor usually the interest, to make sufficiently detailed and accurate observations for the diagnosis and treatment of mental cases. The house officers or internes are too inexperienced.

8. It is always possible to meet any emergency somehow, and the fact that emergencies of the kind under consideration have been met successfully in the wards of a general hospital is not a sufficient reason for thinking that they are the best or even are in general adequate to the needs of these cases.

The essential conditions to be met therefore by any community that is to look after its residuals in the best way our experience has thus far pointed out are as follows:

1. Locked wards having some guarded windows and separate rooms for patients, and capable of having portions shut off so as to segregate different classes of patients.

2. These wards should be in, or very easily accessible from, the centre of population.

3. The medical care should be under the direction of a physician, preferably resident, especially in large communities, who has had experience in the care of the insane.

4. The nursing service should consist of persons of whom at least those holding the more responsible positions should have had experience in the care of the insane.

5. The requirements for admission should be as few and as little formal as possible—the patient's obvious or stated need

should be the only absolute requirement. No certificate should be required.

6. Authority to hold a patient against his will without certificate for a specified time, as five days, should rest with the governing person or body.

In addition to these essentials it would be for the benefit of patients to have quick and easy facilities for consultation with physicians, surgeons and specialists in the different branches of medicine and surgery. This can be very easily arranged if a ward or pavilion in connection with a general hospital is used. Fractures and other surgical injuries are not uncommon as the result of suicidal or violent outbreaks; and more or less obscure or severe somatic conditions, some of them lying within the fields of the various specialties, are also frequent. It is also almost a necessity to have good facilities for at least such microscopical, bacteriological and chemical examinations as are commonly made in the ordinary examination of general hospital patients; and this need becomes absolute if patients are to be kept any length of time for treatment, as at Albany, instead of being sent elsewhere after a short period of observation, as in New York. Larger laboratory facilities are advisable if the institution is large enough to be independent, as at Giessen, Kiel and elsewhere in Germany, and more especially if first-class clinical instruction is to be given to students. If such clinics are to be held, or if patients are to be kept under treatment, they should be able to remain for different periods of time, but not to exceed four to six months. If patients are to be kept for treatment, therapeutic means of various kinds must be supplied.

Each community that intends to make suitable provision for its residuals should decide in what form it shall supply the essentials. The first thing to determine is whether the institution is to be a mere distributing centre which only gives proper care until the patient can be sent to the appropriate place of relief, or a place for prolonged observation and treatment as well. Much larger accommodations are required for the latter. In New York, considerably more than two thousand patients pass through 60 beds annually, whereas 174 patients passed through 33 beds in a year at Albany. It should be said, however, that more patients could have been accommodated at Albany. The German idea is to have

places for treatment rather than mere distributing points. Certainly if they are to be used for study or instruction, and also if they are to help prevent the congestion of the hospitals for the insane, they should have facilities for prolonged observation and treatment.

The next point to decide will be as to whether a ward or a pavilion connected with a general hospital, or a separate institution such as those at Giessen and Kiel is most desirable. This will depend largely on the size of the community. Many American cities of 15,000 to 20,000 inhabitants, and even some that are smaller, have already general hospitals. The addition of a small ward or pavilion to such a hospital might not be beyond the means of the community. Last year Dr. Clark advocated such addition in cities of that size. The difficulty would be to find an alienist to assume the charge of it. Psychiatry is so poorly taught in the medical schools of this country that there are few alienists outside of hospitals for the insane. I know a city of over 65,000 inhabitants among whose physicians there is none who has any special knowledge of insanity. This is a condition however that is being remedied and in the not far distant future it will be less difficult to supply this need. Dr. Sommer, director of the clinic at Giessen, advises that every city of 50,000 inhabitants should have an independent hospital. This is possible in Germany where psychiatry is so much better taught. Here the independent institution might well be founded only in those larger cities that have good medical schools, the pavilion plan serving even large communities well. That at Albany, for example, which draws its patients from a widely scattered population of probably 200,000, is entirely adequate for its purpose. It must be borne in mind, however, that supplying the need will cultivate a demand, and in a few years after the establishment of the ward, pavilion or hospital there will probably be a larger number of patients in proportion to the population than at first.

Finally, before closing, I wish to speak of one possible abuse of the psychiatric pavilion or hospital, which raises a sociological question. A pretty large percentage of the beneficiaries of these clinics are persons who have become for the time being social parasites through self-indulgence. I refer to the cases of alcoholism and delirium tremens. Over 26½ per cent of the patients taken

care of in Pavilion F are of that class. During their incapacity they need skilled care and nursing, and they get it. Their pathway through the mazes of delirium is rendered as easy and pleasant as their condition will allow. Sometimes it is so pleasant that delirium tremens has comparatively little terror for them. They lose one of the strong incentives of self-restraint. If drunkenness is a punishable offence, why should not delirium tremens, which makes the person more dangerous to, and more dependent on, his friends or the community, be punishable in a greater degree? Why should not the patient, after recovering from his delirium, be fined or imprisoned for having had it? Unless in some way it is made disagreeable or disgraceful to acquire delirium tremens, such excellent care as these wards or hospitals can and will supply will only serve as a premium on self-indulgence to the point of personal incapacity and dependence on the public.

A SARCOMA OF THE ORBITAL PERIOSTEUM: REPORT OF A CASE.

By E. M. GREEN, M. D.

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I report the following case because of several interesting features which it presents, namely; a malignant growth involving the periosteum of the orbit, violent maniacal outbreaks, frequent convulsive seizures and, following an operation performed 21 months ago, a restoration to a normal mental condition, a disappearance of convulsions and no return of the growth.

The patient, a negro, age 28, married and the mother of one child, was admitted to the Georgia State Sanitarium August 25, 1902.

The history accompanying her was meagre. It stated that she had been insane two months. "She was noticed to act strangely, leaving home and telling people she was treated badly at home." At times she became violent, and attempted to kill her husband. She was said never to have had a convulsion.

On examination she was found to be fairly well nourished; no disease of any organ being detected. There were present, however, eversion of the right lower eye lid, chemosis, and slight protrusion of the right eye.

Mentally the patient was somewhat exalted, had marked delusions, and hallucinations of sight and of hearing. She was cleanly, had a good appetite, slept well, and was able to help with the work of the ward.

She complained of having had severe and almost constant pain in the right eye for about three months. An ophthalmoscopic examination showed the fundus of each eye to be normal. Vision was 20/30 in each.

During the six weeks following her admission the eye-lid was scarified a number of times, hot and cold applications were made,

and the outer canthus was divided, but at no time could the everted lid be replaced. The chemosis was reduced only slightly, and that temporarily. The exophthalmos increased notably; also the pain.

At intervals of about ten days she would have a series of convulsive attacks varying in number from six to ten. These begun as a general tonic spasm, during which the face and eyes were drawn to the right, followed by clonic convulsions, which appeared to be typical attacks of grand mal.

Twice within the six weeks previous to operation she had violent maniacal outbreaks lasting for several days, during which she would shout, sing, break window-glass, and assault anyone attempting to thwart her. A day or two previous to these attacks she would say she "felt good," "felt happy," and an exalted religious element was present.

On October 22, 1902 I removed the right eye. On the floor of the orbit, on both lateral walls and filling its apex was found a mass of tissue which had caused the protrusion of the ball. This could not be removed except in small sections and, as it seemed to involve the periosteum, this was stripped from the whole cavity back to the optic foramen. The hemorrhage was easily controlled, and the patient put to bed in good condition. She complained of no pain, and rested quietly the first night. In the afternoon of the second day she became anxious, restless, and her temperature reached 100.4° . During the night she had 10 convulsions and the following day 21 occurred. Since October 24, 1902, she has had none.

Her mind began to improve at once, and apparently reached its normal condition within a few days. During the convulsions there occurred an abrasion of the skin over the left buttock; this became infected, involving the skin and the more superficial muscles. These tissues were removed leaving a large granulating surface, which was several weeks in healing.

The tissue removed from the orbit was examined by our Pathologist, Dr. M. L. Perry, and pronounced to be a sarcoma of the periosteum.

The patient's mental condition was completely restored to the normal, and she has now been at home for twelve months.

Her husband wrote me a few weeks ago that she was in good

health, her mind as good as it ever was, and that she had had no convulsions.

He said also that she had had no trouble with the left eye, no pain in the head, and that there is no growth in the cavity of the orbit, this being shallow, and in much the same condition as when she left the Institution.

THE MENTAL CONDITION IN CRETINISM.*

By EDWARD E. MAYER, A. M., M. D.,

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In perusing the various text-books and monographs upon Cretinism, an interest in the subject having recently been aroused by two cases of sporadic cretinism which came under my care, I was struck by the meagre information given by most English and American writers concerning the mental condition found and the lack of unanimity in some respects concerning its relationship to other forms of idiocy and imbecility. A number of writers dismiss the subject by merely remarking that cretins are idiots or imbeciles and many seem to imply that this mental condition is a necessary attribute of cretinism, distinguished only from other forms of weak-mindedness by various physical deformities which accompany the cretin's condition, and though almost all writers to-day affirm the lack of significance in the frequently found tri-basilar synthesis or the presence of epiphyses till adult life, a few still wrongly give these signs undue importance.

That athyreosis is the condition which evokes cretinism is universally accepted, but the exact factors which cause the lack of development from athyreosis are not as yet well understood, nor has the relationship between thyroid activity and other types of idiocy been well threshed out. This subject is of importance to us because in all probability it will help us in investigations of the psychoses accompanied by or due to metabolic disturbance and at least gives us some broad ideas as to the workings of the internal secretions upon psychic functions. In this paper, my attempt will be largely a review of recent investigations upon this subject.

CASE I.—S. R. was born in 1894 near Pittsburg where his father and mother and other relatives now reside. His parents are first cousins, both healthy and apparently normal. He is the third child of five, the second oldest having died very suddenly a few

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months after birth and according to his mother resembled S. R. The other three children are normal. A cousin, a girl 17 years of age, has been under my care for myxedema. Alcoholism or other etiologic factors are wanting. The parents were born in Russia and are both of average build and intelligence.

CASE II.—A child 11 years of age; father, farmer and healthy; mother also strong and active, nothing etiologically elicited, except that about the time the boy was born his parents were in extreme poverty. Both these children present the characteristic facies of cretinism, the myxedematous condition of the skin and the lack of osseous development. Both have subnormal temperatures, muscular weakness and difficulty in locomotion. The second case was not brought to see me because of his cretinism, but on account of his supervening psychosis. Some months before I saw him he developed sleeplessness and agitation instead of his characteristic sleepiness and apathy. Constant irritability, crying out as if in pain, attempts to hide under the bed clothes or in the closets, refusal to eat and drink and attempts to bite any who came near, were the symptoms noticed. These manifestations were quite distinct from the emotional outbursts of anger and resentment, which he, like many other cretins, frequently had. Had the boy been of sufficient intellect I have no doubt that confusion and disorientation would have been noticed and possibly hallucinations would have been clearly in evidence. This psychosis slowly subsided under the use of thyroid extract and arsenic internally, subcutaneous injections of camphor and daily warm baths. The hemoglobin increased from 32 per cent to 65 per cent and the relative proportion of white and red blood-cells became normal. Case I was given three grains of thyroid extract daily with marked results. When I first saw him, his measurements were as follows:

Root of nose to occipital protuberance	32 cm.
Ear to ear	26 cm.
Circumference of head	53 cm.
Height	98 cm.
Abdomen	62 cm.
Chest	54 cm.

Cephalic index 81 per cent, therefore brachycephalic. His weight decreased in three months from 37½ lbs. to 35½ lbs. His genital organs were entirely undeveloped. His teeth were as well de-

veloped as those of any boy of nine years. The pads of fat in the supraclavicular areas disappeared as did also his protruding pouch-like belly. His umbilical hernia also disappeared and his bowels from being obstinately constipated evacuated themselves daily. He soon began to increase in height, so that in the six months he has been under treatment he has gained over two centimetres in stature, and only weighs one pound less than he did when he first came under treatment. His height is now $100\frac{1}{2}$ cm., his abdominal girth 45 cm., his weight $36\frac{1}{2}$ lbs. He wore $5\frac{1}{2}$ shoes six months ago, at present he requires No. 8 and now can be fitted with ready-made clothes. His arteries were hard and after the administration of thyroid had removed the superficial fat, the left external carotid artery stood out tortuous, twice almost doubled upon itself and as hard as a pipe stem. Before the administration of thyroid he presented the characteristic torpidity and stupidity so often noticed in cretinism. Manifestly, however, his intellect had not been of a very low grade, because he had always answered questions by "No" or "Yes" and would sit for hours making very fair attempts at drawing. He could count up to ten and was able to name different objects around the house. Under the administration of thyroid extract, his ability to speak rapidly augmented. He became restless. His motor strength increased. He became mischievous and curiously no longer would sit and draw. He now is about on a par with a five-year-old child, has a bright intelligent countenance and plays with the children of his stature and intelligence. His hemoglobin percentage was 22 when I first saw him and now it is 70. I made no blood-counts in this case. He still has the saucerlike hands, and broad and thick lower jaw seen in cretin children, but otherwise looks normal. In both cases, the thyroid treatment raised the bodily temperature and the pulse rate.

In case II, while his psychosis has disappeared, there has been but little improvement intellectually from the use of the thyroid extract. He has lost considerable weight, has gained a little height, the physical signs accompanying cretinism are no longer as strongly accentuated, but improvement has been very slow.¹

¹ A third case, a patient now under the care of Dr. Heard of Pittsburgh, I saw this winter through his kindness. This boy was started on thyroid

The mental condition of cretins is in most cases that of an apathetic, anergic imbecile. We find all grades of mental enfeeblement from the purely vegetating animals represented by the endemic cretins (*Pflanzenmenschen* of Kocher) to the highest grade of imbecility; some few sporadic cretins are of normal intelligence. The hopelessly idiotic lead little more than vegetative lives, are completely anergic; lie for hours without moving; if placed in the sun will sit staring at it hour after hour, doing nothing except perhaps showing anger or hunger. On the next plane we find cretins who intellectually evince slight interest in familiar faces or surroundings, but who are absolutely dependent upon others. They may show some pleasure in eating and drinking and seem to remember the one who brings them their food, swallowing hastily anything brought without stopping to chew it. They may make slight attempts at speech, but articulation is difficult, owing somewhat or perhaps entirely to the swelling of the tongue and of the mucous membrane of the mouth. They understand little of spoken language even when not deaf. They resist all efforts to make them move or to attend to bowel or urine functions. If upon a little higher plane, they show some interest in the surroundings, will remember the names of members of the family or attendants, do not forget any one who has harmed them and can be disciplined. They prefer to be alone, do not worry and are always passive. If physically strong enough, they can be put to light work. Weygandt remarks that they seem to like to beg, but this is a common characteristic of the feeble-minded.

gland about five years ago by Dr. Pool, his physician at that time. He has gained about six inches in height, has developed from an anergic idiot to a docile, fairly active boy and his intellect is now on a par with any boy of his present size. The height is now 46 inches; abdomen 26 inches, circumference of head 21 inches, from root to nose to external occipital protuberance 14 inches, and from ear to ear 9½ inches. The only other case that I have heard about in Western Pennsylvania was one verbally reported to me by Dr. T. J. Eltrich. In 1803, Harris in his "Journey of Tour in Territory Northwest of Alleghany Mountains" comments upon the many cases of goitre and cretinism in this region, but in a later book (1817), it is asserted that "the goitre or swelled neck has disappeared; the cases which excited the apprehension of the stranger no longer exist to gratify his curiosity. In a few cases it was connected with cretinism and in every case where the experiment was tried the swelling was removed by a journey and change of air."

Cretins then are often very imbecile, but it is wrong to assume with Ziehen,³ Ewald,⁴ Sachs,⁵ and others that this is the constant feature. Ziehen even goes so far as to insist that cretins are generally idiotic rather than imbecilic. But the mental condition differs from that of ordinary idiocy or imbecility in that there is a certain hampering of, or inability for, mental effort rather than the incapability of thinking found in ordinary idiots.⁶ Most cretins can elaborate thought though very slowly, but the deafness or difficulty in hearing which is generally present may make speech difficult or impossible. The cause of this deafness is often not central, but peripheral, due to swollen pharyngeal tonsils, edema of the Eustachian tube or closure of its opening.⁷ If a cretin can hear well, he may attain the mental capacity of the children of his surroundings or be even on a higher plane.⁸ If his tongue and mucous membrane were normal, he would be able to progress more than he generally does. But beyond this stage of childhood he cannot rise on account of these factors. Even without thyroid medication, as was shown in earlier years, if the condition is recognized early, the cretin is capable of more training than other imbeciles. The great apathy present is the worst factor to contend with. There is a secondary functional inability to act, quite different from the "negativism and aprosexia of the erethetic, versatile, excitable forms of idiocy and the apperceptive inability of the anergic forms often functionally produced." Bayon seems to be the only writer who rightly emphasizes the fact that we are all born idiots and that if, as in cretinism, anything should stop our mental development we would remain so. On the other hand, if

³ Pentzold and Stintzing: *Handbuch der Therapie*, 3rd Edit., VI Vol., p. 347.

⁴ Ewald: *Diseases of the Thyroid*, etc., Vol. 22, Nothnagel's *Special Pathology*.

⁵ Sachs: *Nervous Diseases of Children*.

⁶ Sommer (*Diagnostik der Geisteskrankheiten*) groups cretinism as a lack of development due to thyroid intoxication and Kræpelin also includes it among the intoxications.

⁷ Brühl and Nawatzni: *Rachenmandel und Gehörorgane der Idioten*. *Münchener Med. Woch.*, 1903, No. 26, p. 1135. See also Weygandt, l. c.

⁸ Case of Martin Ebert, for instance, cited by Bayon.

⁹ Bayon: *Diagnose und Lehre von Cretinism*, p. 14, Würzburg, 1903.

at the age of ten or twelve years, hypothyroidism developed, the boy or girl would not progress but would retain the mental development acquired before that age. A recent study of the mental state in myxedema by H. Wolseley Lewis, *Lancet*, April 23, 1904, expresses the similar conditions which come on in developed brains, if we consider the difference in brain-power to start with. He says: "Memory for recent events is generally good; apprehension is fair; coherence of thought good; reasoning power sound; consciousness clear; and the essential change in the patients lies in a deficient power of energizing their motor cells. They complain that they are languid and tired and tell of the immense effort it is to them to make even the simplest movement. It is essentially in disturbances of volition and action that the peculiar mental symptoms of this condition manifest themselves. A diminution of volitional impulse produces that lack of initiative, that striking immobility of face and body so characteristic of the disease."

In the consideration of cretinism one fact stands out strongly, namely, that all the symptoms and conditions found are due to a disturbance of metabolism and that this is the result of inefficient activity of the thyroid gland. What substance elaborated by the thyroid glands fails to be secreted or what antiferment normally present is no longer found to act upon certain toxic substances in the blood and lymph is not known, but the results of many investigators (Anderson, Boit, Magnus, Levy, Girber) prove that extirpation of the thyroid gland disturbs the nutrition of the body and that the administration of the thyroid gland increases metabolism. That this disturbed nutrition is the basis of the defective mental development in cretinism, as well as of the other signs of lack of development, is plain. In other words, imbecility in cretinism is always at first of a functional nature and, therefore, can always within certain limitations as to the length of time the imbecility has existed be cured or at any rate improved by the administration of the thyroid gland, which introduces into the system that something which has caused a lack of development.

There are few post-mortems upon cretins described in the literature, Osler and Barker, Packard and Hand*, Hanau,

*First to call attention to calcareous deposits in blood-vessels.

Langhans and de Coulon having described their findings. But all of them are silent as regards the brain-cells and fibres. Lately Bayon and Weygandt have interested themselves in this important question and their results will be given later on.

It is true that some older reports have shown the presence of atrophy, asymmetry or hydrocephalus of the brain, but that was at a time when cretinism was frequently confused with idiocy. It is well known that the cells of the brains of idiots are often of an embryological type (the globose cell of Bevan Lewis) and Nissl has described pathologic changes which are not, however, constant in the brains of anergic idiots (low development of cortex, absent cells, etc.) Weygandt²⁰ and Bayon have lately described a case of cretinism in which the brain cells were not normal. "Nissl's method showed the nuclei of the nerve cells but faintly and smaller than normal. The axis cylinder was not visible, the dendrites but faintly. The apical dendrites (Spitzenfortsätze) were remarkably long, while in Golgi preparations the cortical ganglion cells sent their processes normally to the cortical periphery. In a normal Nissl preparation the apical dendrite is only indicated; in senile dementia, it is visible to about the same length as that of the cell itself; while in a cretin brain its length is about the same as that of the cell. I have found the same condition in Nissl preparations of an old cretin brain which for years lay in the Würzburg pathological collection. I have also found similar cortical pictures in a series of thyroidectomized dogs. The nuclei were colored, the cell bodies were only present in a few places or absent entirely, the glia was increased, the apical dendrites of the ganglia cells appeared here also to be considerably increased."²¹ Hecktoen says that the arrangement of the cerebral convolutions in cretinism is often peculiar. Mills speaks of some of these peculiarities but neither recites cases to show where such conditions were found in true

²⁰ Der Heutige Stand der Lehre von Cretinismus, 1904. Sammlung Zwinglose Abhandlungen aus dem Gebiete der Nerven- und Geisteskrankheiten. In an article in the April number of the *Neurologisches Centralblatt* of this year, he shows how even recent writers have wrongly followed Virchow's views.

²¹ Weygandt: l. c. Bayon does not believe this condition to be peculiar to cretinism, but claims to have noticed it in specimens from patients with simple dementia and from normal sections from Broca's convolution.

cretins. Bayon says:—"The brain of the cretin is neither too hard nor too soft, it is similar to that of a child of his cretin age; I mean by that, in contrast to his real age, the age of the individual anatomically and morphologically. I cannot at present say anything positive concerning microscopically observable alterations as my investigations have not been completed, but the alterations will not be those found in the acute poisoning known as tetany thyreopriva, nor those found in acute and chronic alcohol poisoning."

The evolution of the conception of thyroid activity is interesting, but cannot be given in extenso in this paper, except to remark that thyroidectomized animals show similar symptoms to cretins, that their arteries calcify, their growth is stunted and that they become apathetic, that the administration of thyroid gland in normal individuals hastens the process of repair in fractures (Bayon), that the thyroid gland has an influence upon the central nervous system and upon metabolism (Horsley, Macalister, Leichtenstern, etc.), that it has blood-forming properties (Kocher, Bruns, Cr  d  , Murray etc.), lowers blood-pressure in arteriosclerosis (Starr), that replantation in the peritoneal cavity of thyroid glands offsets the removal of the gland in animals, and that it influences the development of the sexual organs and desires (Guillot, Lawson Tait, etc.).

Telford Smith discusses the question of whether the defective function of the thyroid is an appreciable factor in the causation of idiocy. He gives us, however, no conclusive evidence except as to the result of the administration of the thyroid gland in such cases. He reports, as does Kassowitz, in Mongolian idiocy improvements of a physical and mental kind varying inversely as the age of the patient. This improvement was not as rapid or as marked as in cretins. He also reports improvements in other types which are apathetic and disinclined to movement or speech and in which there has been evidence of diminished metabolism. There is less apathy and speech becomes spontaneous.

Osler ¹¹ in his complete and valuable report upon sporadic cretin-

¹¹ Osler's paper in 1893 may be said to be the first scientific paper upon cretinism written in this country and served to arouse interest for the first time among American physicians on this subject.

ism in America in '97 says that the question of diminished or perverted function of the thyroid gland in causing the mental or bodily defects in ordinary idiocy is one deserving of careful study, but such study has not as yet been successful in deciding the question. An analytic study of those degenerative mental diseases in which we have retarded development is, however, no more important in the solving of these questions than that of diseases in which later in life as the result of disturbed nutrition, as well as of thyroid glandular inactivity, we get mental decay. Inasmuch as we have lately come to look upon paralytic dementia as a general disease in which we find profound changes in metabolism¹³ (Kraepelin, Robertson, Bruce, Jeffries, McCrae), it is interesting to note that Weygandt calls attention to the fact that in both paralytic dementia and cretinism we find the same triad of skeletal, skin and psychic changes.

Weygandt also calls attention to analogous conditions found in dementia precox. Here as is well known we have a progressive psychic disturbance deepening into dementia accompanied by disturbances of other organs of the body. Kraepelin in his psychiatry, calls attention to acute variations in size of the thyroid gland in dementia precox and Chovstek's facial reflex is often noted in both diseases.

"In chronic cases of dementia precox we often," says Weygandt, "note a gray yellow skin, pasty, doughy, reminding us of myxedema at first glance." But such conditions may be found in any chronic degenerative disease where metabolism has failed and the fatty deposits are never elastic and appear upon the skin and stomach where fat accumulates in sedentary people.¹⁴

¹³ Due according to Bruce and others to a toxemia of gastro-intestinal and bacterial origin, syphilis being a stimulant of the leucoblastic tissue so that the natural defences of the body against the invasion of bacteria are diminished.

¹⁴ Alex. Paris in Archives de Neurologie for February, 1904, attempts to explain epilepsy as being a condition whose symptoms are just the opposite of cretinism and therefore due to an opposite condition of the thyroid gland. His contentions are true in so far as goitre is rare in epileptics and epilepsy rare in goitrous or cretinous regions, that the administration of thyroid gland makes epilepsy worse and that we often find an increase in size of the thyroid gland at puberty, the menopause, etc., but that is as far as his explanation goes.

The form of idiocy which resembles cretinism most strongly—Mongolian idiocy—has been the subject of considerable discussion and its characteristics are now well understood. Both represent conditions of unfinished development, Mongolism being, however, always an antenatally arrested development and cretinism being generally acquired after birth. In both conditions we may have the same muscular weakness, stunting of growth, lowered vitality and body temperature, protruding abdomen, constipation, hernia, depressed bridge of nose, small palpebral fissure, protruding tongue and inarticulate speech. In both of these affections certain physical peculiarities have been noted and described. The incurvation of the little finger,¹⁸ the transverse or irregular fissuring of the tongue, with hypertrophy of the circumvallate papillae and a contracted arch have been dwelt upon in connection with Mongolian idiocy, and a thickened spade-like hypothenar eminence like that seen in lower animals in cretinism, by Koplik and Levinstein. These signs have been denied by some, but if present, as they undeniably are in many cases, they can only be regarded as degenerative stigmata.

Osler¹⁹ questions the observation of Telford Smith concurred in by others, that Mongolian idiots are slow and deliberate in movement and eventually apathetic and from observations with Kerlin at Elwyn believes them to be "vivacious, often very sprightly and mischievous." Weygandt²⁰ claims they are apathetic when young, and become erethetic later on.

The following differential diagnosis is after Sutherland:

¹⁸ This incurvation is noticed in defectives and imbeciles of all kinds in as great a proportion as among Mongolian idiots (Fennel, *Journal Mental Science*, January, 1904).

¹⁹ Sporadic Cretinism in America. *Transactions Congress American Physicians and Surgeons*, 1897.

²⁰ *Op. cit.*

Cretinism.

Mongolian Idiocy.

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| <ol style="list-style-type: none"> 1. Characteristic features seldom present before sixth month.¹⁸ 2. Dull, apathetic, impassive.¹⁹ 3. Swollen, dry skin, fatty deposits, coarse and scanty hair. 4. Large swollen protruding tongue. 5. No characteristic skull changes. 6. Swelling of eyelids causes small palpebral fissure. | <ol style="list-style-type: none"> 1. Present at birth. 2. At first apathetic they later become imitative, fairly active but are shy. 3. Absent. 4. Large, often protruding but not swollen. 5. Skull flattened antero-posteriorly, brachycephalic. 6. Palpebral fissure small without swelling of eyelids. |
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It is not the purpose of this paper to consider the different forms of diseased growth which might be confused with cretinism. We might mention; however, that Bayon²⁰ has written an interesting article showing that the cases of intra-uterine cretinism that have been published were probably cases of congenital rickets or foetal chondrodystrophia. Achondroplasia has nothing except stunted growth in common with cretinism. Infantilism may be associated with disturbed thyroid function, but cretinism is more than infantilism, it is infantilism + myxedema.²¹

No statistics have been made concerning the effects of continued thyroid administration as the further histories of cretins do not

¹⁸ Bayon calls attention to the fact that in Bohemia this type of face is the normal race type.

¹⁹ Shuttleworth aptly says: "The facial expression of Mongolism is one of secret joy; of cretinism, one of secret sorrow."

²⁰ Lancet, April 16th, 1904, p. 1051.

²¹ Meigs's classical description of Brissaud's type of infantilism, the myxedematous type, is practically as follows: "Full round face, fleshy, protruding lips, small nose, expressionless face, thin, tender skin, slight growth of hair, long cylindrical body, protuberant stomach, excessive amount of skin, rudimentary sexual organs, thin high voice, small thyroid, childish intelligence." In this type dwarfism is not a fundamental sign as in the other type of infantilism (of Lorain). See Ferrannini, *Archiv für Psychiatrie*, 1904, Bd. 38, p. 209, and Brissaud, *Leçons sur les maladies nerveuses*.

seem to have interested many reporters sufficiently to publish them later on. But it would seem that the gland must be given continuously except for short intermissions, though in some cretinoid conditions in early life the gland given for a short time seems to have permanently restored normal glandular activity. From some reports (Gregor) if the glandular extract is pure, the child can stand an enormous dosage without ill-effect; but if this is so, much of the thyroid extract that is in use is impure. The rise of temperature noticed (Cotton) in its use is probably the result of an impure extract.

That Osler's articles in 1893 and 1897 have awakened interest in cretinism in this country is shown by the number of cases reported since 1897, which are herewith appended.

1. ACKER, GEO. N., Washington. A Case of Myxedema. *Med. Record*, June 27, 1903, Vol. 65, p. 1037. 2 years old. Normal until 18 months old; after an attack of diphtheria its appearance began to change. Did not know its mother; face devoid of all expression. Improved under treatment.
2. ADAMS, J. L., Morgan, Minn. A Case of Sporadic Cretinism. *Pediatrics*, April 1, 1898, Vol. 5, p. 287. Female. 5 years. An imbecile. Disease recognized when $3\frac{1}{4}$ years old. Treatment begun October 23, 1896. $\frac{1}{4}$ tablet dessicated thyroid t. i. d.; increased every 5th day by $\frac{1}{4}$ of tablet. "Marvelous change." Jan. 15, 1897, la grippe and bronchitis. March 1st treatment resumed. 2 weeks later trembling of lower jaw. Treatment discontinued for 2 weeks. Disagreeable symptoms did not return. Last 4 months improvement slow. From a state of idiocy to a condition where she walks awkwardly, speaks a little, tries to sing and whistle, does what she is told, dresses herself, etc. Parents not always strict about treatment.
3. BARBOUR, PHILIP F., Louisville. A Case of Sporadic Cretinism. *Pediatrics*, May 1, 1901, Vol. 11, p. 327. Female. 5 months. Typical symptoms of Cretinism. Now 1 year old. Expression bright, playing with her little sister and in other ways showing her great and marked improvement.
4. BEARD, F. M. Cretinism, with report of a Case. *Practitioner and News*, Louisville, July 1, 1903.
- 5-7. BIERHOFF, FREDERICK, New York. The Recognition and Treatment of Early Myxedema in Childhood. *Jour. Am. Med. Asso.*, Nov. 19, 1898, Vol. 31, p. 1208.

Case I.—Female. 8½ years. First seen Jan., 1897. A well-marked tumor which corresponds to the location of thyroid gland; first noticed 2 years ago, steadily growing, memory failing. April, 1898, tumor entirely disappeared. Treatment stopped. Tumor appeared. Treatment renewed.

Case II.—Male. 11 years. Hungarian. Seen 1897. Thyroid gland enlarged, has been so for 4 years. Mother has a goitre. Tumor diminished in size. Mother stopped treatment.

Case III.—Female. 14 years. Disease began 3 years ago. Slight thyroid enlargement; dull, had to be taken out of school. Disposition completely changed. Treated for 1 year. General physical condition improved. Mental condition improved slowly but steadily.

- 8-9. BOVAIRD, D., N. Y. Academy of Medicine. Two cases of Cretinism. *Pediatrics*, Oct. 15, 1901, Vol. 12, p. 313.

Case I.—4 years. Typical cretin. Under treatment 7 months. Did well.

Case II.—2 years. A less typical appearance of cretinism. Under treatment 3 weeks. Improving.

BURNETT, S. G. Case of Infantile Myxedema. *Kansas City Med. Record*, August, 1900.

10. CARPENTER, H. B., Phila. A Case of Cretinism. *Archives of Pediatrics*, Aug., 1898, Vol. 15, p. 628. Female. 5 years. Presented at Phila. Pediatric Soc. before 18 months' treatment. When first seen looked about 1 year old, could neither talk nor walk. Now she walks, talks, "and one would not think her a cretin."
11. COOPER, ST. CLOUD. A Case of Cretinism. *Memphis Med. Monthly*, June, '99.
12. CLARKE, JAS. FRED., Fairfield, Iowa. *Jour. Am. Med. Asso.*, April 26, 1902, Vol. 38, p. 1102. 20 years. "A marked imbecile of typical cretinoid condition." Under treatment 9 months; gained 2¾ in. in height. "A marked transformation as to intelligence and physiognomy."
13. CLARK AND MCGREER. A Sporadic Case of Infantile Myxedema Resulting in a Cretinoid Condition. *Med. Fortnightly* (St. Louis), May 26, 1902.
14. DAVISSON, ALEX. H., Phila. A Case of Cretinism showing the Results of one year's treatment. *Phila. Med. Jour.*, Oct. 25, 1902, Vol. 10, pp. 602-604. Female. 3 years old. Normal until a "cold" at 4 months old. First seen, 2 years, 1 month old. Thyroid gland could not be felt. Treatment stopped during a severe attack of measles. Marks of cretinism all less apparent than a year ago. Expression bright and cheerful.

- 15-17. DE WITT, J. P., Canton, Ohio. Sporadic Cretinism, with Report of Cases. *Cleveland Med. Jour.*, Aug., 1903, Vol. 2 pp. 365-368. 3 cases.

Case I.—Male. 2 years, 4 months. Cretin from birth. Mental condition undeveloped; could not palpate thyroid gland. 2 years, 10 months. Fine, healthy appearing boy. Bright as others.

Case II.—Female. 4 years. Since birth, undeveloped mentally. Could not feel thyroid gland. 8 months' treatment. Improved at once.

Case III.—Male. 7 years. Cousin to Case II. Developed physically but not mentally. Under treatment 4 months. Developing mentally and has gone to school the last 2 months.

18. ENGELMANN, ROSA, Chicago. Sporadic Cretinism in Children, with Report of a Case. *Jour. Am. Med. Asso.*, Feb. 14, 1903, Vol. 40, pp. 430-435. Male. 7 years. Myxedematous idiot, size of a 3 year old child. First seen March 27, 1900. Grown 4½ in. Talks quite fluently. More intelligent.

19. FREEMAN, ROWLAND G., New York. Sporadic Cretinism. *Archives of Pediatrics*, Aug. 1900, Vol. 17, p. 595. Female. Ceased to grow at 5 months. Evidences of Cretinism disappeared in 47 days.

20. GIVEN, E. E. W., Phila. Pediatric Soc. A Case of Cretinism. *Archives of Pediatrics*, Feb., 1899, Vol. 16, p. 120. 12 years. Born in Ireland. Mental condition equal to that of a child of 7 or 8. Treatment from Nov. 29 to Dec. 13, 1898. Improving. Dr. Given and Dr. Robertson not positive that it is a case of cretinism.

21. GRAHAM, CHRISTOPHER, Rochester, Minn. Cretinism, with a report of a case of the sporadic variety. *Pediatrics*, March 15, 1900, Vol. 9, p. 228. Male. 5 years, 8 months. Had never tried to walk, nor speak. Diagnosis of cretinism. First seen in June. Began to walk and talk during the winter. March, walks everywhere. Fairly bright and playful. Most marked feature is growth.

- 22-24. GORDINIER, HERMON C., Troy, N. Y. Sporadic Cretinism, with report of 3 Cases. *N. Y. State Med. Jour.*, Oct., 1903, Vol. 3, pp. 391-395.

Case I. Male. 9 years. Under treatment, has "shown no evidence, either mentally or physically, of the disease for over 18 months."

Case II. Male. 7 years. Under treatment 1 year. "Marked improvement physically, but less mentally."

Case III. Female. 20 years. No treatment until last winter, improved remarkably both mentally and physically.

25. HAMILL, S. M., Phila. Pediatric Soc. A Case of Cretinism. *Pediatrics*, June 1, 1901. Vol. 11, p. 436. 6 months. Italian parentage. Typical Cretin. Under treatment 3 weeks. "Appearance of the child has changed remarkably."

26. HERMANN, New York. Sporadic Cretinism. *Archives of Pediatrics*, Aug. 1900, vol. 17, p. 596. Age 7 weeks. 2 other children cretins. Described by Dr. Koplik in 1896. Baby under treatment.
27. HIRSH, J. L., Baltimore. A Case of Cretinism. *Medical News*, April 25, 1903, p. 808, Vol. 82. Female. 5 years old. Dull and even idiotic. Improvement noted in 4 weeks. Could stand like a year old child. In 3 months, mental condition had markedly improved. More after 1½ years treatment like any other child of 6. Mental improvement the most striking thing.
28. KENT, S. T. A. Cretinism with report of Case. *Virginia Med. Semi-Monthly*, Dec. 12, 1902.
- 29-30. JELLINAC, San Francisco. *Jour. Am. Med. Asso.*, Nov. 26, 1898, Vol. 31, p. 1304. Sporadic Cretinism. 2 Cases.
- Case I. Female. 4 years, 2 months. "Perfect picture of cretinism." No thyroid gland. Treatment begun Aug. 26. Improving rapidly.
- Case II. 5½ years old. Much the same as first case. Under treatment 13 months. Marked improvement. Treatment begun July 26, 1897.
31. LEWI, EMILY, New York. Congenital Cretinism. *Archives of Pediatrics*, Feb. 1898, Vol. 15, p. 134. 2 Cases. Brother and Sister. Boy under constant observation and treatment since 15 months old. Treatment of infant sister began at 5 weeks and already in better condition than the boy.
32. LINDSAY, CLIFFORD. Case of Sporadic Cretinism. *Medical Standard*, Chicago, May, 1902.
- 33-50. MACPHERSON, ALEX. Sporadic Cretinism in Ontario, Can. *Journal of Med. and Surgery*, IV, pp. 275-1898. 17 Cases.
- 51-52. MILLET, CHAS. S., Brockton, Mass. Cretinism. *Boston Med. and Surg. Jour.*, Oct. 10, 1901, Vol. 145, pp. 400-402. 2 Cases.
- Case I. Male. 9½ years. Typical Cretin since 1 year old. Under treatment 4 years. Grown 15 in. Does not yet put words together. Memory strangely lacking.
- Case II. Female. 32 years. Disease began at 10 years. 4 years ago took thyroid treatment with decided improvement. Neglected it. Retrograded and now shows all the symptoms.
53. MILLS, WALTER SANDS, New York. Cretinism. *N. Y. Med. Jour.*, Feb. 22, 1902, Vol. 75, pp. 325-327. Female. 26 years. Had some form of thyroid treatment for two years, 1896-1898. First came to Dr. Mills, Sept., 1900. Mentally like a child of 6 or 7. Bad tempered and egotistical. Nov. 1901, improved physically. Not much

improvement mentally. Better tempered. Case reported at length as it shows the tendency to retrograde when treatment is stopped. Also the value of treatment in older subjects.

- 54-55. MORSE, J. S. *Annals Gyn. and Pediatric*, Vol. 13, No. 7. Two Cases of Sporadic Cretinism.

Case I. Male. 2 years old. Russian parentage. Improved under treatment.

Case II. Female. 4 years old. Russian parentage. Treated for 3 months. Appetite failed and treatment discontinued. Child disappeared. Reviewed in *Archives of Pediatrics*, Aug., 1900, Vol. 17, p. 626.

56. NORBURY, FRANK P., Jacksonville, Ill. *Jour. Am. Med. Asso.*, April, 26, 1902, Vol. 38, p. 1102. Male. 9 years. Patient seen by him in consultation. Fed on thyroïdin. Result satisfactory and pleasing. Reported at *Tri-State Med. Soc.* (Iowa, Ill. and Mo.)

57. NEWELL, F. F., Burlington, Wis. A Typical Case of Sporadic Cretinism. *Med. Record*, Dec. 5, 1903, Vol. 64, p. 896. Male. 13 years. Symptoms first appeared at 9 months. Dull, could not talk, walked in a clumsy way, under treatment 7 weeks. Results marvelous. Expression of face changed. Grew 1 in. Tried to walk. Took more interest in things.

58. PALMER, F. B. How much may we Expect from Treatment of Cretinism? *Jour. Med. and Science*, Vol. 4, No. 4 (1900), mentions several cases.

59. NOYES, WILLIAM B., New York. Sporadic Cretinism. *Archives of Pediatrics*, Aug. 1900, Vol. 17, p. 596. Female. First seen Sept. 1, 1895. 2 years old and looked like a 6 months old baby. Nov. 24, improvement wonderful, looks like a child 1 year old. Oct. 17, 1896, treatment discontinued, and developing cretinoid symptoms. Child has learned to walk, trying to talk. Looks bright. Only suggestions of cretinism appears in the thick upper lip.

60. PACKARD, FREDERICK A., and ALFRED HAND, JR., Phila. A Contribution to the Pathological Anatomy of Sporadic Cretinism. *Am. Jour. Med. Sciences*, Sept., 1901, Vol. 122, p. 289. Male. 6 years. First seen Dec. 7, 1897. Idiotic and undeveloped. Unable to walk or talk. 9 days after admission decided improvement noted. April 1898. Bright and active "and in every way active quite naturally." November, 1898. Could stand. Learning to talk. Improved in appearance and intelligence. Died Nov. 12, 1898. Ill one week.

61. SHIELDS, EDMUND, Cincinnati, Ohio. A Case of Cretinism following an Attack of Acute Thyroiditis, *New York Med. Jour.*, Oct. 1, 1898, Vol. 68, p. 476. Female. 6 months old when disease began now 7 years. Typical Cretin. 18 months treatment. Marked improvement.

62. PRICE, EZRA O. Case of Cretinism. *Indiana Med. Journal*, Oct., 1902.
63. SINKLER, WHARTON, Phila., Pa. A Case of Sporadic Cretinism, *Phila. Med. Jour.*, June 4, 1898, Vol. 1, pp. 1063-1065. Female. 30 years. Size of a child of 6 or 7 years. Case briefly reported at Am. Neurological Assn., 1896, Referred to by Dr. Osler at Congress Am. Phy., 1897. Worthy of full report on account of remarkable improvement. Gained 3 in. in height. 4 teeth were cut. Physical appearance much better and decidedly brighter intellectually.
64. PRESBURG. *Annals of Gynecology and Pediatrics*, May 1899.
- 65-66. TOWNSEND, C. A., Boston. A Case of Congenital Cretinism. *Boston Med. and Surg. Jour.*, Jan. 12, 1899, Vol. 140, p. 37.
- Case I. Female. 2 years, 5 months. Shows all the appearances of a Cretin. Thyroid gland cannot be felt. Under treatment 2 weeks. Improved in appearance already.
- Case II. 4 years. Unable to stand. Thyroid gland could not be felt. Under treatment two years. Marked improvement physically and mentally.
67. WALLS, FRANK X., Chicago. Cretinism and Thyroid Treatment, with Report of a Case. *Jour. Am. Med. Asso.*, Jan. 20, 1900, Vol. 34, p. 169. Female. 16 months. Treatment begun Dec., 1898. Child has lost all the marks of cretinism. Bright, pretty and intelligent.
68. WANS, M. H. Cretinoid Myxedema. *Western Med. Review*, May, 1901.
69. WHITE, FRANKLIN W., Boston. A Case of Sporadic Cretinism. *Boston Med. and Surg. Jour.*, March, 16, 1899, Vol. 140, p. 257. Female. 2 years. Practically an idiot. No thyroid gland was felt, but there was no notable thyroid depression.
70. WOLFSTEIN, D. I., Cincinnati, Ohio. Infantile Myxedema. *Am. Jour. Med. Sciences*, March, 1898, Vol. 115, pp. 300-312. Female. 4 years, 6 months. Never walked. Looks like an imbecile. Thyroid extract for 1½ years. Walks well. Looks almost like any other child. Mental condition greatly improved. Intelligent and able to talk. Author says: "might justly be termed miraculous."
71. WRIGHT, J. C. Thyroid Extract in Cretinism. Report of a Case. *Austin Flint Med. Journal*, Mason City, Iowa, June, 1900.
72. KELLY, W. D., Cretinism. *St. Paul Med. Jour.*, 4, 1902, p. 324.
- 73-75. Three cases at Penna. Asylum for Feeble-Minded, Polk, Pa. Reported to writer by Supt. F. Moorhead Murdoch.

SENSATION AND MOTION.

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Applying ourselves to the study of nature's phenomena, we are confronted by a vastness of variety, in which, nevertheless, the close observer cannot fail to recognize a multitude of analogies. Forms vary, and at the same time express some kinship; modes differ, and still present similarities; the dazzling kaleidoscope of life reveals its causality; complexities evolve from units, and we begin to realize an all-embracing entity, appealing to us like endless variations of an eternal theme, which is often distinctly felt, more often but vaguely suspected. We become philosophers, scientists and artists, striving to learn to explain and to apply, and finally recede to the fundamental question, "what is life, what is energy?"

In order to gain a broad knowledge of things, we must not be specialists; it is not enough that we explore, analyze and test, we must also compare, recognize and conclude. Philosophic speculation has often born out metaphysical monstrosities, because it had lost touch with the reality of things, but scientists have tended to fall into the other extreme, and while they were compiling data, their views for wider scopes became more and more clouded. Facts revealed by experiments are highly valuable, not so much in themselves, as in opening the gates to those who are capable of abstracting them into far-reaching conclusions or theories. Any theory which adjusts itself with ease to explain the greatest number of phenomena, stands indeed next to a law of nature. All natural laws are, or at least have been, theories at one time.

Approaching the topic of vital functions among which that of the human mind stands preeminent we study its substratum, the nervous system, and appreciate the work done by anatomists, who with the aid of microscope and staining-methods have given us

an idea of its wonderful make-up. But morphology is too limited and therefore does not give us complete satisfaction. We may, with the aid of better microscopes, be able to see more delicate forms, but the best microscope will not reveal to us the soul of form, or that inherent energy which expresses itself in the display of form. We resort to physiology and biology, as these branches of science promise a better understanding of the animate world, but soon we realize that in order to understand the complicated, we must have an understanding of the simple, and it becomes imperative, that we take recourse to those sciences which deal with the elementary properties of substance in general.

Herbert Spencer defines "Life" as the continuous adjustment of internal relations to external relations; now let us consider substance in general, and see, whether that dictum may be extended to the so-called inanimate world. Life as well as energy are manifestations which cannot exist independent of substance. What we call life in the animate has its analogon in the energy of the inanimate. Energy is the intrinsic property of all substance from which it cannot be separated. Energy in its various forms can be traced to the common root of motion. It is a universally accepted theory that the various forms of energy known to us, for instance, as heat, light or electricity are definite modes of motion of infinitely small particles of substance. Motion then is the ultimate unit, and at the same time the limit of an objective conception of energy. But, although we have reduced the various forms of energy to vibrations of substance, although we have ascertained with mathematical precision, their velocity and wave-lengths, have we thereby advanced one step toward the explanation of sensory phenomena? We may, for instance, define light as a mode of motion, but what conclusion can we derive from that to explain light as a mode of sensation?

To attempt an explanation of the phenomenon of sensation, which is so indispensable in our conception of life, we may consider energy under two relative denominations, namely, objective and subjective; or energy objectively manifest as motion, and subjectively manifest as sensation or sensibility. Motion then becomes the objective aspect of that which is only subjective, namely, sensation.

In the event of our ego we realize an exquisite sensory phenom-

enon. All our perceptions, our thoughts and emotions, even the motions of our body and the cognizance of our existence are to us modes of sensation. The life of each individual is in itself a series of sensations of a more or less complex character.

Now imagine an atom and its intrinsic energy ; we know it only from its objective aspect, which reveals its existence ultimately, as a body in motion ; of its subjective existence we know nothing, unless we imply it by analogy. Now let myriads of atoms gather to build up the nervous system of a living being, and there is brought into existence an ego, which has sensation toward which each of the constituent atoms has contributed its share. If millions of atoms make up an organism which has sensation, why should we deny sensation to the individual atom, be it ever so minute? To assume atomic sensibility is only a logical conclusion, but by no means a novel one. As organization ascends in evolution, we see complexity and coordination, of motion and sensation, simultaneously rise to higher perfection ; both phenomena are so inseparable, that we are forced to the assumption that motion is the objective expression of sensation, which is always subjective.

After having conceded sensibility to the unit of matter, because we found sensibility in the coordinate complexity of units, the organism, we may proceed to illustrate the relation of sensation to motion.

A vibrating tuning-fork, for example, is objectively a body in motion ; by its immediate contact with the surrounding atmosphere, it sets the latter into motion, producing definite waves, while each atom, or group of atoms, evokes similar motion in its neighbors, until perchance the acoustic nerve, and along it the centers of hearing in the brain are reached. At that moment the vibrations cease to be objective, they become subjective, and at the very instant when they change their relative denomination from the objective to the subjective, they change into sound. The appreciation of sound is a phenomenon of life, it is, to express it in the language of Herbert Spencer, the adjustment of an internal or subjective relation to an external or objective relation ; in other words, it is an example of the adjustment of sensation to motion.

As a matter of fact, each of us is cognizant only of his own sensorium ; he knows nothing of the sensations of his fellow creatures,

unless he imply them by analogy. How then, is it possible, that one person may communicate a sensation to another person? He must give his sensation an objective aspect, he must translate it, so to speak, into its objective form, in other words, he must express it by an equivalent of motion. And whereas sensation as a subjective phenomenon is not directly transmissible, it becomes so indirectly in form of motion which constitutes its objective equivalent.

In connection with the foregoing more general considerations we may now try to elucidate in detail one of the most important sensory phenomena, namely, visual perception.

Visual perception may be defined as the definite sensation caused in an individual by communicating to him a definite mode of motion or vibration, known as light. We know, that the vibrations produced by an electric current in the wire of a glow-lamp are realized by us as sensation of light. Now let us prove, that the parenchymes of those nerve cells, engaged in the sensory act of seeing, do at the same time perform a motor act by originating vibrations commensurate to those of light.

To that purpose we may derive much aid by scrutinizing a trivial experiment. If one, after having looked for a while at an evenly colored object, for instance, a red disc, suddenly directs his view toward a white wall, he will perceive an image of the disc on the wall; but instead of seeing it in the original red color, the image will present itself in the complementary color "green." It may be remembered here that colors are called complementary to each other, if on addition they compose the color "white." Let white be represented by vibrations of 1000 velocity in a definite unit of time; red, as a fraction of white, be represented, arbitrarily, by vibrations of 100 velocity in the same unit; green, will then, as the complementary color to red, have to be symbolized as vibrations of 900 velocity. While looking at the red disc, the intracellular vibrations of the centers of sight in the brain adjust their vibrations to a velocity of 100, and the sensation "red" is realized; if now the red disc be suddenly supplanted by a white surface, from which emanate vibrations of 1000 velocity, the intracellular vibrations, which were up to that time of 100 velocity, have to be increased by 900 in order to adjust themselves to the vibrations of 1000 coming from the white surface. The addi-

tional intracellular vibrations of 900 velocity are the motor equivalent of the sensation "green." Thus is given a comprehensive explanation of the production of complementary colors in after-images, although this conception of the phenomenon deviates materially from the theories in vogue at the present time, and besides this experiment furnishes an example of a motor act during a sensation.

But there is a more unique method of proving the coexistence of intracellular motion during the act of visual perception. With the aid of a suitable apparatus, which will be minutely described in a later article, we are enabled to take photographs of emanations coming from the eye during the act of visual perception.

It is very probable that vibrations emanate from all nerve-centers at all times, that they are most active during consciousness, and that those from the organs of sight are similar to light-vibrations. During visual perception the rays entering the eye from a source of light disturb the equilibrium of those nerve-vibrations emanating from the optic nerves, consequently, they must adjust their mode in order to balance the mode of motion impinging from without. The increased efflux of energy which restores and maintains the equilibrium between afferent light-vibrations and efferent nerve-vibrations, is subjectively appreciated as a sensation of sight, whereas, objectively, it constitutes a mere motor phenomenon. The outflow of nerve-energy over the optic nerve has an analagon in the continuous efflux of nerve-energy which maintains the tonus of a muscle, and which may, during a definite sensation, be exaggerated to such an extent as to produce forcible contractions of the muscle.

Thus far we have only spoken of that kind of visual phenomena which have an adequate cause outside of the organism, and it seems proper now to mention visual phenomena devoid of an external cause and known as visual hallucinations. Since visual percepts are capable of exciting the emotional sphere of the mind, it is easy to understand that the reverse should be true, and that emotions may evoke their equivalents in the visual regions of the brain; the visions thus produced are not percepts, but hallucinations. It is not a coincident that hallucinations occur exclusively during a state of increased subject-consciousness and abate object-

consciousness of the individual at a time when nervous emanations from within partially or completely overbalance all impressions from without, so that perception, or the adjustment of internal relations to external relations is no longer possible. Then the overpowering subjective feeling pours out streams of nerve energy, and while they traverse the regions of the brain, which in the normal state of mentality pertain to vision, they are formed into sensations of sight. The only difference between visual perceptions and visual hallucination is, that during the former, those nerve-vibrations from the brain are adjusted to light-vibrations from without, whereas, during the latter, the vibrations produced by the nervous system are so powerful that they overbalance the rays of light from the outer world.

Returning to Spencer's definition of Life, which we interpreted, after some elaboration, as the continuous adjustment of subjective relations, or sensation, to objective relations, or motion, we behold the principles of life everywhere, since every adjustment or reaction comprises in itself the elements of sensation, or that inherent power of discrimination, which we meet in the highest forms of life as individual consciousness. Motion reveals itself merely as the means by which nature expresses and communicates sensation; sensation is the soul of all existence, motion is the image; and if motion prevails throughout the universe, it only proves that sensation is omnipresent.

TYPES OF ALCOHOLIC INSANITY, WITH ANALYSIS OF CASES.¹

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In the preparation of this paper, from the Danvers Insane Hospital records available for such study, an attempt has been made to outline the clinical course, to note prominent symptoms of the alcoholic psychoses, and to determine from the study of cases if heredity, the occurrence of any characteristic symptoms, or the kind of liquor used bear any relation to the prognosis; if the manner of drinking, or the form of liquor influences the psychosis; if delirium tremens bears any relation to the later development of other alcoholic psychoses, or alcoholic hallucinosis to the persecutory delusions of alcoholic delusional insanity, and finally to estimate the percentage of cases of alcoholic hallucinosis recovering without appreciable defect.

(During the five years ending with the fall of 1903, 1129 male patients were admitted to the Danvers Insane Hospital. After excluding the dipsomaniacs, who exhibited no active psychical symptoms, and a few doubtful cases where other psychoses were evidently modified by habits of inebriety, there remained 148 cases of the various forms of alcoholic insanity, or 13.1 per cent of the total admissions for the period named.)

The cases have been grouped under the following subdivisions:

1. *Delirium Tremens*: This diagnosis being reserved solely for the cases displaying disturbance of consciousness, disorientation, confusion and tremor, with active hallucinosis.

2. *Alcoholic Hallucinosis*: (a) Acute, (b) sub-acute. Using the term of Wernicke and Bonhoeffer, the diagnosis in these cases is made upon the slight impairment of consciousness, active hal-

¹ Read before the Boston Society of Psychiatry and Neurology, May, 1904.

lucinations, auditory, visual, olfactory and tactile, and delusions usually of the persecutory and apprehensive types, based upon the hallucinations, with little memory disturbance.

3. *Alcoholic Delusional Insanity*: or what may be called alcoholic paranoia, characterized by the slow formation of paranoïd delusions, upon the basis of chronic alcoholism.

4. *Alcoholic Dementia*: These cases show irritability impaired memory, emotional and intellectual deterioration without prominence of hallucinations or delusions.

DELIRIUM TREMENS.

In making the diagnosis between delirium tremens and alcoholic hallucinosis, it is essential to have a full knowledge of the case from the onset of the disease and even then there are intermediate cases, which make the separation difficult. But the diagnosis has been made upon the lines mentioned, as the cases abstracted will show.

CASE I.—George P. Born in Massachusetts. Aged 29. Single. Laborer. No heredity. He had drunk ale and distilled liquors for eleven years and had been often intoxicated, having been twice arrested for that offence. He had worked in a brewery for six months before coming to the hospital. This was his first attack. He was arrested by the police and brought to the hospital at once. On admission his tongue was heavily coated and he showed a pronounced muscular tremor. His tendon reflexes were active. Pulse-rate 110. He was completely disoriented; thought he was in the Swasey Building, Haverhill,—had no idea of time. There were active visual and auditory hallucinations, the former predominating. He saw lions, ghosts, Indians, green snakes and birds in his room. He would hop across the room to catch some animal, shouting,—“Now, I’ve got him. Oh! they are tacked down,” (after failure to lift his catch). He pointed to the wall, saying: “See that little sheeny with his sword.” He dodged a sword-thrust and then added: “He has a double-headed pipe in a brown case. Now see him poking my sister’s baby carriage with his sword. There is a wooden horse’s head trying to eat a dog. Now he is eating a horse-blanket and the dog has got away. See that red-bird with a red ribbon around his neck. What is all this wire whirling around me? You’ve got a little fine blue wire on your left ear and you’ve got eight watch-chains in your vest, one above the other.” He heard voices calling him names. He showed but slight apprehensiveness and would answer questions about his past when his attention could be held for a moment. There was no attempt to explain the hallucinatory phenomena. He was almost constantly in motion in reaction to his hallucinations, for four days refusing food, but drinking liquids freely. He

obtained less than six hours' sleep during this period. On the fifth day, he slept 15 hours without hypnotics, and from that time was oriented, and had clear insight. He had a dreamy recollection of recent experiences, but could not give the details of actual occurrences. He remained in the hospital for three months. He was discharged, recovered, and two years later was reported to be abstinent, working steadily. He had no further mental disturbance.

CASE II.—Herbert G. Born in Massachusetts. Aged 45. Druggist. Married. Average mental capacity. No heredity. First attack. For twenty years he had drunk distilled liquors freely and for many months had been drinking excessively, sometimes using a quart of whiskey daily, but rarely being intoxicated. He was irritable and talked to himself for a few days before the onset of the delirium. Suddenly he became delirious and was kept at home for three weeks, and was then brought to the hospital. He was poorly nourished. Thick brown coating on tongue; sordes on teeth and lips. Temperature 98.6°. Pulse 118, small volume. Peripheral circulation sluggish. There was general tremor and considerable incoordination in the muscular movements. The pupils reacted to light and accommodation. The tendon reflexes were active. No apparent disturbance of sensation or tenderness of nerve trunks. Entirely disoriented for time, place and persons. Able to give name, age and occupation, but little more. Speech thick and almost unintelligible. There were active visual hallucinations. He tried to pick imaginary objects from the bed, floor and his person; and went through the motions of winding strings. There was constant restlessness and feeble groping motor activity, allayed for a time by therapeutic measures. He soiled his bedding and person for several weeks. He became very feeble, requiring saline solution and strychnine stimulation, and for a month after his admission remained in a low, muttering delirium, gaining in strength during the latter part, when he would get out of bed and crawl around the floor; try to climb out of the window and grope about for imaginary objects. For the next three weeks, he made a gradual improvement and at the end of two months, was oriented, had good insight and a dreamy, confused recollection of seeing animals, people in strange garb, of killing a woman by throwing a ship at her, and similar absurd ideas, but was unable to give any details of actual experiences. He was discharged, recovered, after two months of hospital residence. When seen four months later, he appeared to be perfectly well. A year later, his relatives report that he is better than he has been for years, conducting a drug-store successfully. He shows no changes in character or disposition and has used no liquor since his discharge.

In case I, we had a mild attack of delirium tremens with slight somatic disturbance, complete disorientation, active visual and less prominent auditory hallucinations. There was constant motor activity and slight apprehensiveness. The attention could be

held with difficulty, but the patient was able to give correct replies to questions relating to remote events. There was a complete subsidence of mental symptoms following the first natural sleep; convalescence was rapid.

In case II there was a history of prolonged and excessive use of distilled liquors, with the somatic symptoms of a severe delirium, complete disorientation, inability to converse or answer questions intelligently, muttering speech and feeble motor restlessness. The condition lasted for weeks with great physical prostration and was followed by gradual convalescence.

These two cases represent the extremes of this group.

There were forty-one cases of delirium tremens, 27.7 per cent of the alcoholic cases. This low percentage is due to the fact that many cases of delirium tremens never reach the hospitals, while the graver forms of alcoholic insanity more generally require commitment. This is shown by the history given in many cases, of the latter groups, of antecedent attacks of delirium, not requiring hospital restraint.

These 41 cases showed no special features. In every instance there was disorientation, with vivid visual and auditory hallucinations and illusions, tremor and various somatic symptoms. It was the first attack in 32 cases, the second in 3, the third in 2, in 4, the history was unreliable. Thirty-nine patients were discharged as "recovered"; one "much improved," after remaining in the hospital only a few days; and one died from pneumonia. Two of the three patients seen first in the second attack, and one in the third, were admitted later, suffering from alcoholic hallucinosis, and the other seen first in the third attack died about one year after his discharge, during a fourth attack.

The average age of all delirium tremens cases at the time of the first attack, was 33.9 years.

The patients were usually convalescent by the end of the first ten days after admission, but the average duration of hospital residence was 3.1 months.

So far as can be estimated from these cases, the prognosis in uncomplicated cases of a first attack is good, there having been no development of any more serious disturbance that could be connected with this attack.

ALCOHOLIC HALLUCINOSIS.

(a). *Acute.*

(b). *Subacute.*

(a). *Acute alcoholic hallucinosis.*—Under the diagnosis of acute alcoholic hallucinosis, the abstracts of some cases typical of the mild and severe forms of that group are presented.

CASE III.—Louis B. Born in Poland. Age 39. Operator. Married. Heredity denied. First attack. Has used liquor moderately since an early age and within the past three years has frequently been intoxicated, having been arrested six times in the past year for that offence. He gave a history of having worked irregularly and of having drunk to excess up to the day before his commitment, when he suddenly heard voices calling him vile names and making threats. He went about the streets seeking to escape from men whom he fancied were following him, and finally locked himself in his room where he was arrested on the complaint of the landlord and taken to the station-house, reaching the hospital on the following day. On admission, he showed some fine general tremor. Temperature normal; reflexes unchanged. He was oriented, gave a good history of his life with a fairly good account of recent experiences. He heard detectives trying to get into his window and talking outside the door; frightful suggestions were made and he showed great apprehensiveness, based entirely upon auditory hallucinations. He improved rapidly. Only broken sleep was obtained under hypnotics for the first two nights. Voices were heard with decreasing reaction for three days. After that time the patient had good insight and even joked about his trouble. No intellectual deterioration was found during a hospital residence of two months. Discharged, "recovered." Two weeks later he was seen intoxicated. The subsequent course of the case was not traced.

CASE IV.—Frank M. Born in Canada. Age 33. Single. Morocco dresser. Heredity denied. Below the average in intelligence. No previous attacks. Had been a daily consumer of whiskey for about 15 years. Frequently drunk. For several days before admission, while at his work, and at night he had heard voices, threatening and talking about him in an abusive manner. At night he saw "images of men" and "visions." He fancied the men were trying to injure him. He became very apprehensive and was brought to the hospital. On admission the temperature was normal. He was oriented and there was no disturbance of consciousness. He gave a good history of his life with minute details of recent events. He had active auditory hallucinations during the first week after his admission. The same voices he had heard before admission annoyed him at night by saying: "You'll be crazy all your life." "Take a razor and cut yourself." "You fool, fool, fool, you'll be arrested." During the first day in the hospital, he saw men around him of whom he was afraid. His apprehensiveness quickly disappeared under assurances from the at-

tendants and at the end of the second day, he had partial insight, and said of himself,—“Oh, my head is turned upside down, brain is loose, and it goes around like a wheel. It feels as if there were wires in it.” There was no elaboration of apprehensive ideas and hallucinosis entirely disappeared at the end of the first week, leaving the patient with clear insight. Discharged, recovered, at the end of three months of hospital residence. Remained well and used no liquor during the next year.

CASE V.—Greenleaf T. Born in Massachusetts. 59 years old. Average ability. Musical temperament. Married. Plumber. Paternal grandfather insane. Father died of obscure cerebral trouble at 55. Mother died at 30 of pulmonary tuberculosis. Two sisters are “peculiar.” Had used distilled liquors moderately for thirty-five years. For several years prior to commitment he had taken from 4 to 6 drinks daily, but never drank to intoxication. First attack. For some time before commitment he had been fault-finding, irritable and sleepless, and for about one month had heard voices threatening and talking about him. He purchased a pistol to protect himself from fancied danger and fired several shots about the house at night. He had given up work a few days before commitment and rapidly became more apprehensive and excitable. Talked of suicide. The night before commitment, he was walking about his house carrying a revolver in his hand, apprehensive and quarrelsome when restrained, though perfectly oriented. On admission to the hospital he was found to be of good physique. Temperature 99.4° F. General muscular tremor. Pupillary reactions normal. Knee-jerks much exaggerated, slight ankle-clonus. Other reflexes active. Sensations unimpaired. He was oriented for time and place, and was able to give a complete history of his life and an account of recent events. He had active auditory and visual hallucinations, the former being more prominent. Was extremely agitated and apprehensive much of the time. During the examination he started to leave the room, saying with every appearance of alarm: “Don’t you hear them talking about me? Hear that fellow say: ‘They have got T. now.’ If you hadn’t come just as you did, I’d been a dead man sure, and don’t you forget it.” He heard voices accusing him of incest and other crimes, or telling him his wife had deserted him; that members of his family were sick or dead. During the first night at the hospital, he had occasional visual disturbances, once stating that he saw men “slashed and killed,” or that he saw men “trying to get him.” Only at this time, were visual hallucinations detected. There was some insight. He said: “I don’t know what is the matter with me, everything is all mixed. I can’t think.” There was intense reaction to hallucinosis shown by his intermittent fear and agitation and the apprehensive, persecutory ideas based upon hallucinations. He fancied himself the victim of a conspiracy, believed he was going to be killed, and begged to be given his liberty, saying,—“I want to go home. I don’t want to stay here. These fellows act very hard and will kill me just as sure as the world. If I have to stay here, I’m a gone sucker. Let me go home and I won’t say a word. Now, how would you feel if

you came in and found me dead?" For six weeks after admission, he had hallucinations and showed similar reactions. Gradually he began to sleep better, his appetite improved and the apprehensiveness became less marked. The auditory hallucinations became less terrifying. At no time was there complete disorientation, though for the first ten days he confused dates and persons, and later his memory of this period was indistinct, many of the events seeming to have a dream-like character. On one occasion, he tried to break out of his window to escape from his fancied peril; on another he tried to leave by climbing through a transom.

The return of complete insight and the correction of the apprehensive ideas followed quickly the cessation of hallucinosis and he was discharged, as recovered, at the end of ten weeks' hospital residence. A year later, his relatives reported that he had used no liquor since his discharge, had resumed his duties and appeared perfectly well.

CASE VI.—Frank C. Age 37. Born in Massachusetts. Operative. Single. Paternal grandfather died of "softening of the brain." His father had been intemperate, and died of apoplexy at 64; had shown mental weakness for some years before his death. Two brothers were intemperate, one having shot himself fatally while suffering from the effects of alcoholic indulgence. For over twenty years, the patient had been a constant user of distilled liquors and beer. He had been repeatedly arrested and fined for drunkenness and eighteen months before his admission he had suffered from a disturbance diagnosed by the attending physician as delirium tremens. He made a prompt recovery and was well in the interval, during which time he drank excessively. A few days before his commitment he became nervous, and at first had occasional visual hallucinations which he corrected and remained at his work. In two or three days, he began to think that his fellow workmen were talking about him, threatening to make him a pauper, and to inflict bodily injury upon him. He became very apprehensive, secured a revolver and threatened to commit suicide; he then applied to the police for aid and was brought to the hospital on the following day. On admission, he was perfectly oriented, had active hallucinations, and apprehensive, persecutory ideas based on his hallucinations. He said the early visual disturbance was due to drinking, but that for some reason his shopmates had conspired to injure him. He said that he heard them talking about him constantly; that they had followed him to the hospital, and that he heard them outside his door and window. He tried to hide in the room fearing he would be shot. He heard them saying he was to be sent to an inebriates' home for life; that he ought to be shot and applying abusive epithets to him. His consciousness was clear and his memory fairly good even for recent events. There was slight general tremor. Reflexes normal. There was no further visual disturbance. The auditory hallucinations persisted for nearly a month, but there was little reaction to them after the first two weeks, and at the end of a month they had disappeared, and he had good insight. There was a slow, steady improvement from the first. He was discharged, "recovered,"

three months after admission. Two years later, his relatives reported that he had been well and working since his discharge, but had been drinking excessively for a few months and recommitment was probable.

Cases III and IV are fair representations of the mildest form of disturbance in this group. The former having shown an acute onset of auditory hallucinations and apprehensiveness, but with perfect orientation. Disappearance of symptoms and with good insight at the end of one week.

Case IV shows a more gradual onset. For several days faint voices were heard; they became more substantial, threatening and abusive remarks became definite and apprehensiveness followed. The patient began to have visions; he saw dim images and had many apprehensive ideas based entirely upon hallucinations, which disappeared in about three weeks, leaving him with clear insight. Orientation and memory were unimpaired during the attack.

Case V had a longer onset with gradually increasing auditory hallucinosis, reacted to by fear and attempts at self-protection and threats of suicide. Visual hallucinations played a minor part, being observed for only a few days; there was little insight and the patient was partially disoriented at the height of his psychosis. Persecutory and apprehensive ideas were entirely based on hallucinations and rapid, complete convalescence followed their disappearance.

Case VI is one of a second attack, with heredity of intemperance and insanity, and presented about the same symptoms as case V, with the exception that the persecutory and apprehensive ideas were more marked with a slight tendency to elaboration and there was less hallucinatory confusion.

The milder cases bear considerable resemblance to delirium tremens. The more severe forms are separated from the subacute group by an arbitrary division.

In the 33 patients observed, 16 were of foreign, 17 of native birth. Twenty-one were married, 12 single. Average age 37. Only four were above the grade of laborers or tradesmen. In 14 cases, it was the first attack; twelve had had one previous attack of delirium tremens or hallucinosis, and seven had had two or more. Eight preferred ale and beer, but all used distilled liquors. Twelve were considered to show varying degrees of congenital deficiency.

In eight cases, heredity could be excluded. There was distinct insane heredity in nine cases, a number which would probably have been increased had reliable histories been obtainable from all. In eight of these nine patients there had been previous attacks. They invariably presented severe symptoms, and their subsequent history, with one exception, shows a return to drinking habits and more or less mental disturbance.

Of the entire number, ten made definite suicidal attempts and two suicidal threats, as a consequence of active hallucinations. No characteristic neurological symptoms were observed. In 7 cases, the tendon reflexes were increased; in 7 they were diminished. The knee-jerks were absent in 2 cases. Ankle clonus was present in 1 case. Unequal pupils, with impaired light reaction in 6 cases. In 24, there was a varying degree of muscular tremor.

As regards the mental symptoms, 9 patients had auditory hallucinations alone; 22 had auditory and visual hallucinations with prominence of the former, and in 2 olfactory hallucinations were seen in addition. The duration of the hallucinosis varied from a few days to several months. The reaction varied from slight apprehensiveness to distinct persecutory ideas, definitely related to the hallucinosis. There was imperfect insight in all the cases and in the more severe there was hallucinatory confusion with some impairment of memory for the period.

One patient died at the hospital; all the others were discharged, after an average hospital residence of $3\frac{1}{2}$ months, as recovered or much improved. Less than 25 per cent. of the patients, traced after discharge, have remained temperate and able to perform their duties successfully. Several have been reported as drinking excessively and showing changes in character and disposition, and all of these have had two or more attacks of alcoholic mental disturbance.

(b). *Subacute alcoholic hallucinosis*.—The course in subacute hallucinosis is prolonged, frequently marked by relapses; i. e., there are several periods of active hallucinosis and a comparatively clear mental state in the interval. Olfactory and tactile hallucinations are common, and there is more disturbance of judgment, resulting in greater prominence of persecutory, somatic and apprehensive ideas, based on the hallucinations.

The following abstracts are representatives of the group:

CASE VII.—Stafford W. Colored. Born in Virginia. Aged 54. Laborer. Married. Heredity unknown. Below the average in mental capacity. For over 25 years he had used distilled liquors and beer almost daily. For several years before commitment he had been employed around bar-rooms, drinking daily and often getting intoxicated. There was no history of a distinct previous attack, but for three years he had been irritable and suspicious when drunk and, as stated by himself and members of his family had had occasional fleeting auditory and visual hallucinations, often reacting to them by acts or threats of violence, or by temporary apprehensiveness. For several months before admission to the hospital, the hallucinations had been more or less constant, and for two weeks he had been unable to do his usual work, and was sleepless; the appetite was poor; he had had active hallucinations and apprehensive and persecutory delusions based on hallucinations. He finally threatened to kill members of his family and others whom he heard talking about him and was committed. On admission, he was poorly nourished. Neurological examination negative. There was mitral regurgitation and the heart's action was irregular. Pulse 90. History of typhoid fever and rheumatism in early life. He was oriented; the consciousness was clear and there was practically no memory defect. In describing his experiences he said,—“I don't seem to know what is the matter. I think all my family have been murdered. To-day, I heard my grandchildren call me and spirits told me they were dead. For three years, God, man or the devil has got the upper hand of me.” In the midst of a conversation, he would pause and address an imaginary character, saying,—“Now, I'm talking with the doctor, you keep still.” He had seen “spirits” in the shape of “little devils” jumping around his room, calling him abusive names, “aggravating, tormenting and poking fun at me.” Men hovered about him for the same purpose. Disagreeable odors were produced. Voices continually threatened and abused him. Once only he gave evidence of tactile disturbance, complaining that he had been shot full of needles. At first he was very apprehensive, but within a few weeks fear was rarely observed, though the auditory hallucinations continued with decreasing intensity for about five months. The visual and olfactory disturbances were not noted after the first few weeks, after which he reacted but little to hallucinations. At times he was rather surly and evasive when questioned; or again he would make joking remarks about his troubles and display increasing insight. About five months after admission to the hospital, he had corrected his ideas. He was assigned to some routine work and was amiable, and conversed well, but was rather listless, taking no interest in his future, and expressing no wish to leave the hospital, though his family were able to give him a home. At no time was there disturbance of orientation, consciousness or pronounced intellectual defect. He was discharged as recovered after 13 months of hospital residence. Two years later his wife reported that he had worked steadily, used no liquor in the interval and had displayed no evidence of active mental disturbance.

CASE VIII.—Frederick M. Born in N. H. Aged 44. Married. Driver. Both paternal and maternal uncles were intemperate, and his father was a drunkard. The patient had drunk whiskey and ale almost daily for 23 years, with the exception of two periods of about four years each when he was abstinent. He had been frequently intoxicated, and had been arrested several times. He had had one attack of delirium tremens ten years previously and had taken the "gold cure" about five years before this attack, after which he had used no alcohol until one year ago. For several months before commitment, however, he had been drinking to excess. He had worked up to the day before his arrest, and had returned to his home that night under the influence of liquor. During the night, he became terrified by hallucinations, auditory and visual. He opened his window and called for help and the police, who took him to the station-house where he remained for 36 hours, in a state of active hallucinosis, but oriented and able to give a full account of all his experiences.

On admission he was found to be a man of powerful physique. The heart and lungs were negative. Temperature normal; pulse 80. There was a slight general tremor, no ataxia. Knee-jerks diminished. He was perfectly oriented and remained so throughout. There was no disturbance of consciousness or memory defect. He saw men about him with revolvers and once a sword was thrust at him. He constantly heard talk about his mother being robbed and murdered by the police, who were trying to cover up the crime by having him placed in the hospital. He heard that he was to be killed and begged the physician to protect him, promising a money reward if he were saved. He had also many similar apprehensive and persecutory ideas based on hallucinations. This state lasted for ten days, the symptoms gradually abating. On the tenth day at the hospital, he approached the physician in a frank smiling manner and said,—“I have just come to myself. I’ve been thinking that someone was trying to teach me some sort of an organization, but I’ve been making a fool of myself.” For three days he seemed to be in a normal mental condition but suddenly became moody, inactive, attacked a patient whom he fancied was talking about him, accused an attendant of saying that he was suffering from syphilis, heard men lying in wait for him around the corners and showed almost constant apprehensiveness. For the next five months there was active auditory hallucinosis to which he frequently reacted by acts of violence. He was surly and evasive for two months, later becoming more amiable and talking about his disturbance. He heard voices at all times; they came from the air, out of the floor as passers-by lifted their feet; passing trains whistled his name repeatedly. He heard voices telling the cards he held to his opponent. He saw faces staring at him from the paper he read, from the walls and from the sky. Aside from the usual reaction to these phenomena he showed some tendency to elaborate delusions. He fancied someone in Lynn was responsible for his trouble; they were trying to initiate him into some order. On one occasion, he fancied he was in authority and gave orders about the hospital, threatening to kill the doctors

if he was not obeyed. The hallucinosis gradually became less active and insight became better, but he had not corrected his ideas and had occasional auditory hallucinations at the end of five months of hospital residence, when he was transferred to another hospital, from which he was discharged against the advice of the physicians, three months later, having shown some slight improvement. His subsequent history is not obtainable.

CASE IX.—Martin C. Born in Mass. Aged 23. Laborer. Single. Below the average in mental capacity. Had several insane relatives on the paternal side. Father intemperate. The patient had used distilled liquors and beer freely for eight years, and had frequently been drunk during the past five years. He had had an attack possibly of delirium tremens six weeks before the onset of the present psychosis; had worked during the interval, drinking heavily and often being intoxicated. Ten days before admission, he began to imagine people were following him about the streets. He gave up work; his appetite became poor and he was sleepless and apprehensive. He was arrested for throwing a brick through a neighbor's window and committed to the hospital. On admission, the physical examination was negative, excepting that there was fine general tremor and the tendon reflexes were exaggerated. He was oriented and had a good memory for recent and remote events both on admission and throughout his stay at the hospital. He had active auditory, visual and tactile hallucinations. He saw people on the wall "working X-rays and the bioscope on me" and added,—“they have been doing this for two weeks and they have made my kidneys weak, burned my flesh, and they can do it right under the bed clothes, and it burns me.” He showed apprehensive and persecutory ideas, fancying that his tormentors had followed him to the hospital to continue their abuse. At the end of two weeks, he was sleeping well, and was less excitable and apprehensive, but still had active hallucinations, complaining that he was “all knocked out by the X-rays and bioscope.” He said that he could see people at a distance operating the machine on him, and heard voices, but tactile disturbance was not noted.

Six weeks after commitment, he wrote,—“Mrs. S. and Kitty and her son, Charlie, are working the bioscope and X-rays combined on me since I came up here. They are talking how near they came to killing you when you were sick, they put it all over you. They were putting it in my eyes when I was sleeping in my bed, and I discovered them working the X-rays into the bioscope. I turned right over on my belly and could see right into the room where they were sitting down. They had rods about four feet long, reaching up to the bioscope, working the X-rays onto the pillow of the bed. I heard them talking about how they fooled your brother, Willie. They said they killed Dennie with the X-rays and they had it in Willie the day he was burned.” This narrative was continued to some length, showing a tendency to elaborate delusions. He rarely showed any emotional excitement during the remainder of stay in the hospital, beyond a slight irritability when his statements were questioned. For several months, he was inactive, complained of his auditory and visual

hallucinations, but showed little reaction to them. He showed no disorder in his conduct and was neat in the care of his person. He gradually showed increasing interest in his surroundings, and began to work. The hallucinations gradually faded out and 18 months after admission he appeared to have good insight, and entirely corrected his former ideas. His memory was good. He conversed well and had a fair knowledge of current events. He remained at the hospital eight months longer with no more active mental disturbance. He was always smiling and pleasant, but rather indifferent and probably displayed some emotional deterioration. Over a year later, his relatives report that he has used no liquor since his discharge, is industrious and seems to be well.

CASE X.—Henry W. Born in Ireland. Aged 28. Laborer. Single. History as to heredity and previous attacks unreliable. He had been a steady user of distilled liquors and beer for about ten years. He had often been intoxicated, and for several weeks before admission had been on a protracted debauch. Finally he applied to the police for aid, and was committed as insane in April, 1903. The note on entrance says that the patient was a powerful, well nourished man; slight tremor was apparent but the physical examination was otherwise negative. He was fairly well oriented for time, place and persons. There was a slight memory disturbance for a period of a few days before commitment, though he could tell where he had been and much of what he had done. He gave a good history of his previous life. Had active visual, auditory and olfactory hallucinations. For several days he had seen and heard devils. They tormented and talked about him abusively. He heard them say that his soul ought to be let out and while in the police station he tried to cut his throat with a sharp stone, and banged his head against the wall in attempts to commit suicide. The auditory hallucinations consisted of abuse, and remarks about him; such as,—“He has been a good fellow, but he was foolish and led astray.” He could smell brimstone as the devils approached. He showed considerable apprehensiveness, had no insight and could not account for his experiences. The auditory and visual disturbance continued with gradual abatement for 20 days, when they apparently ceased entirely and patient had good insight as to the character and cause of his trouble. For nearly a month, he seemed well. Then the auditory hallucinations suddenly returned, but there was no visual disturbance. Voices talked to and about him more or less constantly, and he was irritable and apprehensive for about a week. He was perfectly oriented during this period. He wrote a letter to a priest, saying that he had broken his pledge, had gotten into trouble and heard that he was going to be driven out of the church in consequence. Then for six weeks he appeared well. He recognized that his fears had been imaginary and stated that he was ashamed of his conduct, which he remembered clearly. After five weeks of an apparently normal condition he again began to have hallucinations. At times he was unruly and surly in his manner, but always oriented and had a good memory. The disturbance lasted for several months. At

the time of writing, he is in the hospital and for some time has talked about his trouble evasively. He denies having any hallucinations at present. He is oriented. There is some memory defect, but he can recall most of his hospital experiences. He thinks he came to the hospital as a result of hard drinking, and adds,—“I’ve been pretty well wound up in here. I was ashamed the way I acted, after I came to myself again.” He is quiet and orderly, but rather indifferent to his surroundings and seems to show considerable emotional deterioration. He does some work about the grounds and follows the daily routine without expressing any desire for change of surroundings.

CASE XI.—John M. Born in Ireland. Aged 42. Liquor dealer. Married. Above the average in ability. No heredity or previous attacks. For over twenty years he had been in the habit of drinking all kinds of alcoholic beverages. Drank daily but had rarely been intoxicated. For over a year before admission, he had appeared peculiar, was suspicious and fault-finding. For seven months he had had hallucinations at intervals. He thought people were following him about the streets. He heard that he was going to be driven out of business; that his wife was in league with others to force him into bankruptcy. One night while preparing for bed he had tactile hallucinations. He imagined that his wife turned an electric current on him from a concealed battery. He got an axe and tried to find and demolish the battery, and called the police to the house to aid him in his search. He was taken to the police-station for twenty-four hours and then removed by relatives, his excitement having subsided. He returned to his house, accused his wife of using a battery on him, got his effects and went to a boarding-house for some months, but continued to provide for his wife and children. Of what happened during the next four months we have no accurate history. He had been working as a drummer for a liquor house and had aroused no suspicions among his associates as to his mental condition. Then he returned to his home, depressed and had active hallucinations for several days. He heard voices, fancied he was drugged and was suspicious of those about him. He was taken to a private hospital, where he remained only a few days, with some improvement. He absconded and returned to his home, gave up business, and lived quietly at home for three months. During this period he did not show much interest in business matters, but displayed good judgment in looking after some property he owned. He was suspicious of his wife; occasionally referred to his previous hallucinations, and did not fully correct his ideas concerning them. His wife noticed that he was unusually inactive and sometimes depressed. Just before admission to the hospital he grew worse, became very suspicious of his wife, heard voices and fancied he had been drugged. He cut his throat with a razor and was taken to a general hospital and on the tenth day was committed to Danvers. He was poorly nourished, being twenty pounds under weight. The wound of the larynx had healed. There was slight aphonia. Some tremor. Tendon reflexes exaggerated. Physical examination otherwise negative. He was

quiet, self-possessed, and conversed readily; perfectly oriented for time, place and persons. There was no evidence of hallucinations at this time, though he fully described those above mentioned, and believed in them. He could not account for them in any way, and did not try to explain why his family and others should have any but the kindest feeling towards him. His memory was good for everything except the suicidal attempt. He claimed that his wife had drugged him that evening, and that he remembered nothing until the officers came to take him to the hospital. He reacted normally to his surroundings, but showed slight depression when talking of his troubles. During the next five months, he gained 30 lbs. in weight, and showed no evidence of hallucinations. He was amiable to all, asserting that his affection for his family was as strong as ever, though he could not explain his former treatment. During this time a guardian was appointed and the court allowed his wife a monthly sum for maintenance. He insisted that this should be increased so that there need be no change in her living arrangements. He went over his accounts and showed good judgment in his suggestions about disposing of some property. He never had clear insight, did not correct his ideas and seemed rather indifferent, accepting his confinement as a matter of course and showing no active interest in his own welfare. Auditory, visual and tactile hallucinations became suddenly active for a period of ten days with intense reaction to them; consciousness and orientation were retained. He felt something "like a shell" strike him in the mouth and said,—“It went all over my left side and tied me up so I could not move, and I thought surely I was going to die.” He attributed this to his wife's actions, and likened it to the “shock” received at home. He heard his wife, acquaintances, doctors, priests and others talking to and about him. He accused the physicians of turning electrical currents on him through the radiators in his room. He saw his daughter come into the room at night. She told him that he was to be killed. He saw strange men making for him. He would answer the voices and was much excited at intervals. He refused food, affirming that he had been told it was poisoned. He slept irregularly, being alternately depressed and excited. The hallucinations were constant. He spoke of the present disturbance as the same as the one previously experienced.

The outbreak subsided rapidly, and for four months his condition was much as before, though he was somewhat more indifferent and inactive. Then, there was another short period during which similar hallucinations and reactions were noted. At the time of writing, the hallucinations are slowly fading out from the last attack. There is little, if any, memory impairment for the recent periods of active hallucinosis.

In Case VII, we see a prolonged onset, the hallucinations gradually taking on definite shape, reacted to by violence, apprehensive and persecutory delusions, with no elaboration but some attempt at explanation. The auditory hallucinations were most

prominent ; the tactile and olfactory disturbances transient. Memory and consciousness were not affected.

Case VIII was of a sudden onset, with remission in a few days, during which the patient seemed to have good insight, and to have corrected his ideas. The hallucinosis, auditory and visual, was the prominent feature of his case, accompanied by the common reaction, with some attempt at explanation and formation of an ill-defined delusion system, which was largely abandoned before the hallucinations disappeared.

Case IX is marked by a slowly developing hallucinosis, transient olfactory and tactile deceptions, auditory and visual hallucinations being vivid and prolonged. Consciousness was clear throughout and there was but little memory defect. The delusions were entirely based upon the hallucinations, which continued long after the patient showed no active reaction to them.

In cases X and XI, the former of sudden onset after a protracted debauch, the latter coming on gradually after many years of daily drinking, we see as a prominent feature the remissions. In both, there have been numerous outbreaks of active hallucinosis. There was but little delusion system in either, and in the intervals, partial insight and correction of ideas were noted.

In the 25 cases of this group, the average age at onset of the attack was 37 years. Eight patients were of foreign, seventeen of native birth. Thirteen were single, twelve married. Twenty-two were laborers or tradesmen.

As to the form of liquor used, only three preferred malt to distilled liquors, and all used more or less of the latter. Eight were steady, daily drinkers, rarely intoxicated ; seventeen drank more irregularly and among them drunkenness was common. The duration of drinking habits varied from eight to over twenty-five years. Eighteen of the number would have to be regarded as below the average in mental capacity.

It was the first attack in ten cases. In ten, there had been one previous attack of delirium tremens or hallucinosis, from three months to ten years previously. Two patients had had two, and two three previous attacks. In one the previous history was not known. Six patients made definite suicidal attempts, and four made suicidal threats in reaction to active hallucinosis.

Auditory hallucinations alone were seen in three cases ; auditory

and visual in thirteen, the former predominating ; auditory, visual, olfactory and tactile in three ; auditory, visual and tactile in five ; auditory, visual and olfactory in one.

The delusions were more extensive and of much longer duration than in the former group, but they were almost exclusively based on the hallucinations with little elaboration. Expansive ideas were noted in several cases, and the patients usually explained all their hallucinatory disturbance. In the later stages of the disease, there was usually a blunting of the sensibilities with very little emotional reaction to the various delusions, even while hallucinations were active.

There were no distinctive neurological symptoms. There were two cases of alcoholic polyneuritis with the usual symptoms. There were four cases presenting some appearance of paresis, irregular, sluggish pupils, disturbance of reflexes and tremor, with a positive history of syphilis in three. All four have been under observation from 2 to 5 years, and up to the present time, there has been no further evidence of paresis. Similar cases have been spoken of as instances of pseudo-paresis. The differential diagnosis between paresis and alcoholic disturbances would have been uncertain at first, but the prominence of the characteristic hallucinosis, its typical course and the non-development of parietic symptoms during a period of years furnish the basis for a positive diagnosis.

The results in this group are less favorable than in the former. Eight of the patients still remain in the hospital and show evidences of permanent deterioration of varying degrees. Seven cases could not be traced, but of these five, at the time of leaving the hospital, showed undoubted evidences of deterioration. Only four patients, and these all after first attacks, are reported by relatives to be abstinent, industrious, and to appear as well as before the psychosis. The others are said to be working irregularly, drinking frequently, and showing symptoms which cause their relatives to report that they are not so well as before the attack.

ALCOHOLIC DELUSIONAL INSANITY.

The term *alcoholic delusional insanity*, has been used for cases in which delusion formation has been the dominant symptom.

In a small percentage of cases, the delusions develop in men of middle age, without a history of any hallucinatory disturbance. Of these cases it may be said that in each instance there was a history of almost daily alcoholic indulgence for many years.

The large majority had some form of hallucinosis, as a symptom and basis for the elaboration of delusions of persecution, influence and marital infidelity which were the most frequent. Ideas relating to drugging and poisoning were common, and in several cases grandiose tendencies with changes in personality were seen.

There is a tendency to chronicity and relapses in cases that show improvement. The following abstracts are from representative cases:

CASE XII.—David M. Born in Ireland. Aged 42. Laborer. Married. Neurotic heredity. For over 20 years, he had used liquor and beer almost daily, and frequently went on protracted sprees. He was treated in the Worcester Insane Hospital 15 years ago, for "Acute Alcoholic Delirium," and was discharged "recovered." He resumed his habits of hard drinking, but worked steadily up to 1901, when he gradually ceased working and rarely drank, as he had no money. The police had recognized that he was odd and peculiar for several years. His wife, an ignorant woman, was unable to give any satisfactory history of this period. He was admitted to the Danvers hospital about one year ago. He was poorly nourished, showed enlargement of the heart, with a systolic murmur. The tendon reflexes were active. There was a coarse intention tremor of the upper extremities extending to the neck muscles; he was unable to carry a glass of water to his mouth or to write properly, making a coarsely tremulous signature only after great efforts and by grasping the pencil with both hands. This tremor was said to have been present in many members of his family for three generations. He talked freely when admitted, was perfectly oriented for time, place and persons. His school knowledge was well retained and he had a fair knowledge of current events. His memory was apparently unimpaired for recent or remote events, but some tendency to falsification was noted. He said that for some years he had heard "voices around the corner," and remarks made about him as he went along the street. He heard voices telling him things he wishes to know. Feels strange sensations in his body. He had formed many delusions with little system. He thought that there had been a conspiracy to prevent the Irish Catholics getting work and said he had noticed it for 13 years. He said that the brains and education of the Irish had been taken away from them and attributed it to a change in religion. Voices told him that priests were maltreating nuns on church property, and he hung around the grounds to protect the latter until he was driven away. In addition, he had many ideas of the persecutory type. Soon after admission, he became

surly and evasive, forming delusions about his present surroundings. He was frequently abusive to attendants and physicians whom he accused of trying to injure him. He asserted that the physician did not intend to release him and asked,—“Can you assign any reason why there is a weakness in my legs and a string across my eyes when you pass?” He made many unfounded accusations concerning the management of the hospital and thought that there was a persistent effort to ruin the Irish patients. At one time, he heard women singing through his viscera and at times voices gave him information. During his stay at the hospital, he has been lazy and inactive, refusing to take any part in hospital duties or recreation. He accepts everything as a matter of course and shows no normal interest. He reads and can converse on the topics of the day and at all times is oriented and has a good memory. He still remains at the hospital, his condition being unimproved.

CASE XIII.—Michael D. Born in Ireland. Aged 34. Married. Laborer. Father intemperate. Sister insane. In early life the patient worked in a brewery, drank large amounts of beer and whiskey daily, and was often intoxicated. In 1896, he was committed to the Worcester Insane Hospital. The onset was sudden, following prolonged drinking. There were auditory and visual hallucinations. He was apprehensive and attempted suicide. There was a steady but gradual improvement, the visual hallucinations disappearing in a few days and the auditory in three months. He was discharged “improved” the following February.

For a time, he appeared well but resumed his drinking habits, and soon began to be suspicious of his wife accusing her of intimacy with other men. He misinterpreted her actions, fancying that some ordinary act was a signal to other men. He became unable to apply himself to work and was committed to Danvers in March, 1903. On admission the physical examination was negative. He gave a history of intermittent hallucinations, auditory, visual and tactile, for some years, but of little reaction to them. He had well defined persecutory delusions, and was jealous and suspicious of his wife. He was perfectly oriented. His memory was good. His emotional attitude was indifferent, almost apathetic. He was taken from the hospital by his family in August and re-committed in November, 1903. While at home he had refused to do any work, and had been irritable and had had delusions. Upon his return these were more pronounced. He imagined his wife exerted an evil influence over him. He said, “Sometimes I feel good and strong, but my wife has a power to take this from me, and I bear more of a woman’s form than a man, and I can’t help it. It is all her fault trying to be over me.” He says he hears her give a command and then feels his strength leave him. He accuses her of infidelity, and says he has seen “the retracted shadow of a young man” in the act of coitus with his wife. He accepts the situation with little show of resentment. At the present time the delusions are practically unchanged. He has a good memory for dates and events. His school knowledge is well retained. There is marked emotional deterioration as shown in his indifference and lack of interest in the present and future.

In Case XII, we have a history of delirium tremens in early life, with apparent recovery and a subsequent resumption of the drinking habits, followed many years after by the development of hallucinations and the elaboration of a delusion system affecting himself, his countrymen, and all relations with his fellow-men.

In Case XIII, there was an attack of hallucinosis at the age of twenty-six with questionable recovery. The patient resumed his drinking habits in a short time, and there was a gradual development of delusions of influence, persecution and marital infidelity, with apparent improvement following hospital life and a prompt relapse when returned to home influences.

In the 34 cases of the group, 15 were of native, 19 of foreign birth. All were laborers, tradesmen or small dealers. Twenty-nine were married, 5 single; 19 of the number would have to be considered as below the average in mental capacity. A satisfactory family history was not obtained in eight cases, but in 50 per cent. of remainder there was a record of psychoses, neuroses or intemperance in immediate relatives. The average age on admission was 44 years. Seven used beer or ale as their favorite drink; 27 had a preference for distilled liquors, but, as in the former cases, all used more or less distilled drinks. As to the manner of drinking, four were in the habit of going on periodical sprees, with intervals of comparative abstinence, but in 30 cases there was a history of steady, almost daily drinking, and frequent intoxication in the great majority of these. Eleven had had a previous attack of delirium tremens, or hallucinosis, from 4 to 15 years previously. Five had had two or more attacks, none being later than two years before admission. Four had made attempts at suicide, and seven had threatened to kill themselves. Thirteen showed no definite neurological symptoms. Exaggeration of the tendon reflexes was twice as common as diminution. Tremor, more or less pronounced was seen in 50 per cent. of cases and in 7 unequal or sluggish pupils were noticed. Six cases had no history and presented no evidence of hallucinations. It is interesting to note that the average age of this number was 54 on admission; that all had been addicted to daily drinking for over 25 years. Without exception, they were men little affected by large amounts of liquor in early life. Of the entire number, 9 had auditory hallucinations, 3 had auditory and visual, 10 had auditory, visual and tactile, and

6 had auditory, visual, olfactory and tactile. The delusion system in many cases was based upon the hallucinations, but was elaborated to an extent not seen in the subacute hallucinosis. Nearly 50 per cent. of the married cases showed delusions of marital infidelity, the most common and natural acts of the wife being interpreted as evidence of her guilt. Many believed that attempts had been made to poison them, hallucinations being often the basis for this belief. Various somatic ideas were common and seemed to have the same basis.

In others, persecutory ideas were developed, changing according to the environment of the patient; changed personality, and grandiose tendencies were seen in some of the more severe cases. A listless indifference to the delusions was common after some months' duration, many patients speaking humorously of their fancied trials, while there was still lack of insight. Twenty-three cases were discharged from the hospital, and in these, the average duration of the disease from its inception to the time of discharge, was nearly two years. In the 11 cases remaining in the hospital, the average period of observation has been four years, with apparent prospects of improvement in two cases only. Thirteen of the 23 discharged cases have been traced and after a period of from one to four years, only four are reported by relatives to have resumed their work and family relations without appreciable detriment from their psychosis. The other patients have either resumed their habits of inebriety or display mental symptoms recognized by relatives.

ALCOHOLIC DEMENTIA.

Under the term alcoholic dementia have been grouped the cases of primary deterioration, not intimately related to other forms of the alcoholic psychoses. The resemblance between this condition and paresis is often perplexing, and the differential diagnosis can be made only after prolonged observation; the development or non-development of positive paretic symptoms being the only reliable guide to diagnosis.

CASE XIV.—E. F. J. Born in Mass. Age. 49. Married. Theatrical manager. No heredity. He was above the average in mental capacity and up to recent years had managed a successful business. First attack. For

over 30 years the patient has been addicted to the daily use of whiskey and for ten years has averaged from one to two pints daily. He rarely became so intoxicated that he could not walk steadily, as large amounts affected him but little. His drinking habits increased to such an extent that he became incapable of attending to his business, because of his constantly semi-intoxicated condition. He was committed to the Danvers hospital in 1899, and discharged, improved, after a residence of three months. At this time, he showed some memory defect for recent impressions, and did not display a normal appreciation of his condition. For some months after his discharge, he was abstinent and resumed his business, but soon began his daily drinking, and was in a maudlin condition most of the time. For three years, he managed to make a poor living and then lost his business, and for over a year before his last admission had practically done nothing; his home was broken up, and he was again committed to the Danvers hospital in 1903. He was semi-intoxicated at the time of admission, but on the following day was oriented and had a good grasp of his surroundings. His school knowledge was fairly well retained, and he was able to remember remote events clearly, but was uncertain about dates. There was no evidence of hallucinations or delusion formation. He has now been in the hospital for over six months, showing no change in his mental state. He is mildly euphoric, inclined to jest about his habits, speaking lightly of his family obligations, slightly resentful because his wife does not take a more active interest in him, after all he has done for her, but thinks that his drinking has worn out her affections, and when he leaves the hospital,—something he shows little interest in doing—he intends to make his home at a hotel. He is confident that he can get a good situation at a large salary and will do that rather than resume business. He is fond of games, his pipe, and joking with other patients. His letters to relatives consist largely of request for tobacco and sneering allusions to their lack of interest in him. He takes little interest in current events outside of his small circle. His memory for general events can be estimated when he says,—“Cleveland, Hayes, Garfield and Roosevelt,” have been our last presidents in order of succession. He passes hours daily lying idly about the wards. In a chance meeting he would present a fairly good appearance, but his memory, judgment, emotions and powers of initiation are so much impaired that he is a mental wreck. His physical condition shows nothing of special interest.

CASE XV.—John L. Born in Mass. Age 47. Married. Saloon-keeper. Mother insane. First attack. For over 25 years has used liquor daily, whiskey being his favorite drink. In early life, large amounts did not affect him, but in recent years, his resistance was much diminished, and smaller amounts made him quarrelsome and unreasonable. For some time he had not managed his business successfully, having had difficulty with his accounts and showing a waning capacity for management. Members of his family reported that his disposition had changed materially in the past five years. He became silly and garrulous when sober, and suspicious,

irritable and unreasonable in his family relations when under the influence of liquor. He drove his customers away by his demeanor toward them, and was in financial trouble when admitted to the hospital in 1903. Aside from a hypertrophied heart and slight nephritis, the physical examination revealed nothing of special interest. He was perfectly oriented. His memory was imperfect for recent events of common interest, and he was unable to retain new impressions well. To the physicians he was pleasant and garrulous, making long tedious explanations to show that his actions were justifiable, but showed no actual delusions, and no hallucinations. He showed imperfect insight, great emotional deterioration, dulling of the finer susceptibilities and impaired judgment. He was inclined to look upon his commitment as a great mistake, on the ground that he was perfectly capable of regulating his habits, but viewed the matter in the light of a joke, of which he did not realize himself to be the victim. Throughout his hospital residence of two months, he was the butt of other patients who had no difficulty in playing upon his fears with absurd predictions as to his future. There was no improvement in his mental condition at the time of his discharge.

In cases XIV and XV, we have a history of daily drinking for many years, followed by gradually decreasing powers of resistance to alcohol, and increasing mental enfeeblement as the first symptom. The mental impairment shown is characteristic of the remainder of this group. Thirteen cases of dementia have been observed, nine of the patients were of native, four were of foreign birth. Eight were married, five single. Eleven were laborers or tradesmen. Eight would be considered below the average in mental capacity. Distilled liquor was the usual drink of twelve. The average age on admission was 51 years. With one exception, the entire number had been daily drinkers for periods varying from 20 to 40 years. Drunkenness had frequently increased with advancing years, and was usually the direct cause for commitment. Five had had one attack of delirium tremens or hallucinosis from 5 to 14 years before admission. One had had two attacks, the last over 15 years ago. There was a history of recovery from these in each case. Ten of the patients were free from any form of hallucinosis during observation. Three had transient auditory or visual disturbance at the time of admission, and these three were the only ones to show any delusion formation, which was of short duration and based upon hallucinosis. There was a permanent memory defect in every case, imperfect recollection of recent events being pronounced.

Two made suicidal threats at different times, and two made suicidal attempts while under the influence of liquor.

The neurological symptoms were more prominent in these cases than in the other groups. Unequal and sluggish pupils, Romberg's symptom, ataxia, tremor, and changes in the tendon-reflexes were symptoms noted separately or in combination in nine of the cases.

The *prognosis* is unfavorable. There is usually sufficient improvement from the immediate effects of hard drinking to warrant removal from the hospital in a few months.

Of eleven patients discharged within the past five years, six have been traced and only two are capable of doing any regular work and none were believed by relatives to have recovered their normal mental state.

Epileptiform convulsions has been a symptom about equally divided between the several groups, 10 per cent. of the entire number having had from one to several seizures during periods of hard drinking. There were no convulsions after admission to the hospital.

Some conclusions drawn from a limited number of cases are as follows:

I. (Heredity of insanity or intemperance is common, and has an unfavorable influence on the course of the disease.)

II. The persistence of tactile and olfactory hallucinations in cases of subacute hallucinosis affects the prognosis unfavorably.

III. Somatic and grandiose delusions or a changed personality in alcoholic delusional insanity indicate a chronic course, with a probable unfavorable termination.

IV. (A history of periodical habits of drinking is more common in delirium tremens and hallucinosis, and of daily drinking in the delusional type and dementia.)

V. (The free use of distilled liquors is noted almost without exception in all cases.)

VI. Hallucinosis but rarely develops directly from an attack of delirium tremens, but is often preceded by one or more attacks.

VII. Alcoholic hallucinosis often serves as the basis for elaboration of the delusion system seen in the delusional type.

A CASE OF MORAL INSANITY WITH REPEATED HOMICIDES AND INCENDIARISM AND LATE DEVELOPMENT OF DELUSIONS.¹

By HENRY R. STEDMAN, M. D., BROOKLINE, MASS.

On October 30, 1901, J. T., a professional nurse, about forty-five years of age, single, and born in this country, was arrested on the charge of murdering Mrs. M. G. at Cataumet by poisoning, on the 13th of the preceding August. There was sufficient ground for belief that she had also fatally poisoned, within the preceding six weeks, an entire family of three persons who were related to M. G. The duration of the last illness of Mrs. M. G. was not over sixteen hours. The symptoms, which were similar in all the cases, were those of narcotic poisoning. M. G. went unexpectedly into a somnolent condition from which she could not be roused, and coma and death soon followed. The relatives who, as it was believed, met death at J. T.'s hands were Mr. and Mrs. A. P. D., her father-in-law and his wife, and Mrs. H. G., their daughter, on all of whom she had been in constant attendance from the first.

Mrs. D. died on July 4, after an illness of eleven days. The illness was characterized by intermittent coma, occasionally deep. In the intervals: drowsiness with occasional rousing up and partial consciousness. Pupils contracted, but not firmly, with dulled sensibility to light. On one occasion improvement with rationality, succeeded by profound coma and death.

Mrs. H. G., who died July 31, was ill ten days or two weeks, with similar symptoms. She became dull and stupid, "moped around the house, and finally went to sleep and never woke up."

Mr. D. died Aug. 9, after an illness of seven hours in which somnolence predominated, and complete unconsciousness rapidly supervened.

They had all been in good health before the appearance of these

¹ Read April 21, 1904, before the Boston Society of Psychiatry and Neurology, and the Am. Medico-Psychological Ass'n, May, 1904.

symptoms. The nurse had for years been on an intimate footing with the family, who were attached to her and regarded her as one of themselves. Her services were offered at some suggestion of hers or theirs regarding trivial ailments, real or fancied. She gave enemata freely, and often administered medicines in that way.

These short and fatal illnesses, so much alike and of such an unusual nature, occurring as they did, one after another, in the space of a few weeks, finally aroused suspicions of foul play, which naturally centered in J. T. who had nursed and dosed the victims, and had only summoned the physician when they were at the point of death. That she was well aware of the sentiment against her there is no room for doubt, as she was not only pointedly questioned on the subject by several persons but was actually told by a relative of one of the deceased that she was suspected of causing the deaths. Notwithstanding this, we find her in her old home only a fortnight later in L. in attendance on Mrs. B., an old lady and friend, who is suddenly and unexpectedly taken ill soon after J. T.'s arrival, and dies within forty-eight hours of the first appearance of a train of symptoms closely resembling those in the case of Mrs. M. G. The analysis by Dr. E. S. Wood, professor of chemistry at the Harvard Medical School, of the organs of four of the bodies revealed the presence in each of more than sufficient morphine to cause death. In the liver of the other body, that of Mrs. D., he found very distinct traces of morphine. It was the only one not embalmed, and as it had been buried nearly four months the organs were in an advanced stage of decomposition.

One of these persons held a note of J. T.'s to the amount, it is reported of several hundred dollars. She was also accused after her arrest of having stolen from three of the others, sums of money which were missed after their deaths, but there is no proof of the truth of these charges. There was no suspicion of theft from the other victim, and in the search for a motive in her case a threat of exposure was advanced by the relatives. While Mrs. B. was in the midst of her illness a detective called at the house, and in the room below the sick chamber questioned J. T. at length about the deaths of her last four patients, ostensibly with the view of fastening the guilt of murder upon another person.

Throughout the entire interview she was calm and self-possessed, showing no trace of anxiety and talking freely and pleasantly. She made no attempt to implicate others. Not long after this she told one of her friends that a state detective had told her that she was suspected of the crimes and must prepare to defend herself.

She remained here about a month, entertaining her friends,—in the meantime writing the physician of one of her Cataumet victims, “I have been taking my vacation and am willing to come back any time for a case.” On September 29 and 30, 1901, she made two attempts to poison herself, probably with morphine, the last an apparently determined one. An emetic given after an hour and a half was followed by return of consciousness. She gave later, as her reason for these attempts, that she was jealous and desperate because a man of seventy years, a connection of Mrs. T., was very attentive to one whom he has since married. As a final attempt to induce him to break off this intimacy J. T. wrote him, from the local hospital where she was sent immediately after these attempts, an absurd and abusive letter in which she accused him of being “the father of her unborn babe.”

After leaving the hospital she made a visit to some friends in a neighboring state, of which she has lately written: “I never even thought of the investigation about the murder while at A. until I was arrested. I was having a fine time out there. I don’t think I ever enjoyed myself as I did that fall. There was a jolly lot of people there, and I had the kind of time I like to have. I remember perfectly well the detective reading the warrant and saying, ‘I have come to arrest you for the narcotic poisoning of Mrs. G.,’ and even then I cannot think it made much impression on me. The funniest thing about it was that I was annoyed because the detective insisted on remaining in my room while I was getting ready, and I did not think it was very gentlemanly.” She left the house, on her arrest, with perfect composure and without the slightest remonstrance. On the long trip to the jail she was at first thoughtful, but later talkative and in good spirits. She talked freely to the officers about herself, and seemed entirely willing, then and at the jail, before seeing her counsel, to admit her guilt, and showed little or no realization of her situation, a condition of mind which she maintained throughout her imprisonment and

trial. She was indicted for the murder of three of her Cataumet patients, but her trial was upon only one count, that of the murder of Mrs. G.

On March 3, 1902, about four months after her arrest, the prosecution and defence effected an arrangement whereby Dr. Geo. F. Jelly, Dr. Quinby and the writer were called upon to conjointly examine and report upon the mental condition of the prisoner with reference to her responsibility. Thus the question was practically submitted to a commission at law, which allowed the examiners free interchange of opinions and impartial sifting of all obtainable evidence on both sides. In fact, it resolved itself into a medical consultation on the diagnosis of a case of alleged disease. A more practical and satisfactory method, and one more in keeping with the principles of scientific inquiry, could not have been chosen, and its adoption by the attorney-general in such an important case would seem to be a long step toward abolishing, in criminal cases at least, the opposite and customary practice which has done so much to discredit expert opinion.

The evidence upon which our opinion was chiefly based was in part furnished by the prosecution and in part collected by ourselves. Since the patient's commitment other facts antedating her arrest have been brought to light, and are here introduced for the sake of uniformity and completeness.

Her original name was Honora Kelly. In 1863, when about four years of age, she and a sister were placed in a foundling asylum by her father, an eccentric man who drank hard to the time of his death. She has two living sisters; one, a respectable and capable woman some years older who corresponds regularly with J. T., the other, a chronic dement in one of our state asylums. A third sister was adopted but turned out of doors when found to have an illegitimate child. She led a dissolute life and died recently.

When about six years of age Honora was apprenticed to Mrs. T. on indenture papers, and took the name by which she has since been known. She was given a good education, proving intelligent and quick to learn. Mrs. T. brought her up as a daughter and she was "made much of" by the family. Until J. T. was a woman she was under good moral and religious influences, home surroundings and discipline and had good associates, but her incorrigible propensity for deceit, falsehood and trouble-making, never absent from the first, proved too much to contend against, and her mother finally refused to allow her to remain longer in the family.

Her impossible tales and her lies, often senseless and doggedly persisted in, despite positive proof of their falsity, are well remembered in the neighborhood.

At twenty-eight she began her career as nurse by four years of training and service in two general hospitals. There she showed much capability in the technical part of her duties. "She knew how to take good care of her patient but did not like to work." Although not of attractive appearance, she had a pleasant manner, and was wonderfully clever in ingratiating herself with such patients and physicians as she wished to please, and remarkably skilful in escaping the consequences of wrong-doing and in implicating others. Her hospital life revealed her earlier tendencies, but aggravated in form and more serious in results by reason of the greater opportunity for their exercise. Among the nurses, also, she made friends. One of them states, nevertheless, that she was looked upon as "queer" and "peculiar" by her fellow-workers because of her unfounded and absurd suspicions, tale-bearing, slanderous gossip and consequent mischief-making, as well as her pleasure in inventing fabulous tales. In several well authenticated cases she attempted, by charges afterwards found to be false, to procure the removal of patients from the institutions, and succeeded in two instances. [In connection with one of these cases she wrote one of the patient's friends, who had met her only casually, a peculiar letter, stating that as he had made inquiry about her family (which he had not done), that she was quite willing to tell him that her brother was in an insane asylum. She then went fully into her family history.] On the other hand, she is known to have prolonged the illness of favorite patients whom she wished to keep in the hospital, by reporting symptoms that did not exist and falsifying temperature records. In other cases she recorded false temperatures for no obvious reason. During her term of service at one of the hospitals many articles were missed: sums of money, stationery, aprons, uniforms, etc., and she was suspected of stealing them, but her friends spoke so well of her and she was so adroit that the suspicion went no further, in spite of the evidence against her. In administering medicines she was extremely reckless and frequently gave larger doses than had been prescribed. Even at that time she was often heard to say that there was no use in keeping old people alive (a favorite sentiment with her since). She was also fond of asking about poisonous drugs and their antidotes.

In view of the long wake of sudden and mysterious deaths of patients, which followed this woman throughout her career as a nurse, the following incident of her hospital life is at least worthy of passing notice. Miss D., a nurse, who had a slight illness, was put under her charge by day and was soon seized with sudden and extreme collapse. By much effort she was brought out of danger in the course of the night. When J. T. came on duty the next day the same symptoms reappeared. Another nurse was put in charge and the patient recovered. Some time afterward J. T. asked a head-nurse if she had heard that Miss D.'s condition had been due to poison.

She was at that time, and has often since been, suspected of the opium habit, because of her strange conduct. This is of course possible, but careful inquiry, as well as long observation of her at times when such a practice if previously indulged in to a great extent would have been revealed in the characteristic symptoms which follow sudden deprivation of the drug, has failed to show any such addiction. Moreover, her general conduct has since been the same or more marked in situations where opium-taking was impossible. No tendency to sexual immorality or to drinking habits was ever noticed in her so far as we can learn.

She was discharged from both hospitals, in one instance just as she was about to graduate from the training school.

On leaving the hospital she took up private nursing in which she was for many years very successful, inspiring certain families, not a few of them of high social position, with confidence in her skill and affection for herself, in spite of caution from physicians who knew her record. She was "greatly liked and trusted" by one family who unsuspectingly employed her after the death of one of their number at her hands. Experienced and able physicians recommended her for a time on account of her capability. Her own friends who know her better speak of her jealous and vindictive nature and bad temper. Her conduct was considered "strange" by not a few—just in what way they cannot specify. As to her propensities for falsehood one person reports: "She had an extraordinary facility for inventing lies and remembering the lies that she told others." Another: "She is a constitutional and clever liar, but I did not find it out until two years ago." Her passion for trouble-making for its own sake, by carrying tales true and false and insidiously fomenting enmities for no apparent reason, though far less readily and generally realized than when she was at the hospital, came gradually to light. She borrowed money from patients or their relatives which she never repaid and, although she earned a good living, had many debts, which, however, gave her little concern. Occasionally, small sums of money and articles of clothing disappeared where she was employed, but she was rarely suspected and never detected in theft nor, to our knowledge, directly accused of it. Accepting her guilt in this respect as proven, however, the fact that, except in a few instances, they were all petty thefts, and that in many cases nothing whatever was missing, plainly shows that money gain was not a controlling motive for her homicides. She undoubtedly prolonged some cases for profit, but on the other hand cut short many that might have proved equally lucrative, by poisoning the patient. She set four fires, but gave the alarm and helped vigorously to put them out. Two were set in the same house in order to frighten a nervous patient and retard her improvement. The others occurred in cottages of her friends.

Her general conduct toward the end of her career as nurse is suggestive of increasing demoralization. Her stories grew more sensational and preposterous. She caused, for example, some consternation by an utterly baseless report of a severe epidemic of typhoid in a neighboring seminary.

She repeatedly maligned physicians who had employed her to other physicians and to patients, and even criticised the method of treatment in the presence of physician and patient. In spite of this, she retained to the last a number of friends who thoroughly believed in her.

We have also been able to satisfy ourselves that to crown this career of crime and disordered conduct J. T. committed 20 homicides, 12 of which she admitted at the time of our examination. While in jail she made a list of 31 of her victims, for her counsel, giving names and addresses or other means of identifying them. Her statements regarding the 20 homicides are abundantly verified in 4 by the character of the symptoms and by autopsy; 12 are sufficiently proven by careful accounts of the train of symptoms magnanimously and freely given the writer by the attending physician in each case, which were in every instance but one characteristic of narcotic poisoning, and which they now agree to have been the cause of death; and 4 have been fully, and we believe faithfully, described by immediate relatives. Of the 11 deaths reported by her, above this number, 4 are yet to be investigated, but seem suspiciously like the others in causation; in 2 the whereabouts of the family are now unknown; while in 5 there is too much uncertainty as to the precise cause of death to warrant including them among her victims. Space will not admit of further description of these cases. The manifestations were strikingly similar. All but one of the cases—in which strychnia was plainly the cause of death—showed all or most of the following symptoms: drowsiness, full, slow pulse, contraction of pupils, stertorous breathing, cyanosis and slow respiration. A not infrequent feature was the subsidence of the coma for one or more intervals, and the patient's return to full or partial consciousness until finally put to death. A number of her victims were patients of one of her chief benefactors and includes one of his connections.

Among her effects a much-worn textbook on poisons was found which fell open at the chapter on opium.

At our first interview at the jail, she seemed for a time somewhat serious and distrustful, but soon became at ease and talked freely, volubly and intelligently. She appeared quite indifferent to her situation and seemed to regard our visits chiefly as pleasant breaks in her monotonous life. Her talk was more or less rambling and rather irrelevant. Her utter mendacity and disposition to speak slurringly of even her best friends and to make accusations against them, almost without exception—to praise one minute and blame the next—was very marked. We therefore soon found that we should be obliged to depend largely for our opinion upon facts obtained from others, accepting as true only such of her statements as were corroborated by reliable evidence.

She told many tales which we knew to be sheer inventions, among them, a story of her parentage, her alleged father having in reality lived in China for two years immediately preceding her birth; another, of her horror of the dead which was so great that she sometimes fell senseless at the

sight of dead bodies, even those that had died a natural death, the fact being that she had often laid out bodies with her own hands as a matter of course. Her attempts at suicide she narrated with glee, but admitted that the last was a serious one, and for the most part adhered to her story that jealousy had prompted them. She also stoutly denied that she had ever stolen anything or been dishonest in money matters, although admitting that she had failed to repay loans of money and that she had always been slack and "mixed up" in money affairs. At first she denied also that she was guilty of the homicides with which she was charged, but finally, and by no means unwillingly, confessed (although advised not to incriminate herself) that she had poisoned twelve patients and had made two unsuccessful attempts to poison others. She also admitted that she had set four fires, two of them at the residence of a patient under her charge. She told of the deaths with calmness, adding eulogistic remarks. The poisonous agent employed was, according to her story, always morphia, occasionally combined with a fatal dose of atropia. She could not remember the details in all cases because, as she remarked, "poisoning had become a habit of her life."

[The facts: first, that her favorite method of administration of the drug was in Hunyadi water or by enemata because the drug could in these ways be given without the knowledge of the patient; second, that when possible she did not summon the physician until the victim was moribund: and finally, that she sometimes so combined drugs in kind and proportion that their resulting effect was an unusual and perplexing set of symptoms, made it most difficult and in some instances impossible for the physician to ascertain the true nature of the patient's illness. A request for an autopsy by the physician, moreover, invariably met with refusal through J. T.'s vigorous opposition to the suggestion. This accounts in large measure for her long immunity from detection, and it seems probable that if she had not, in her increasing mental demoralization, so far abandoned herself to her craving for poison-giving as to put to death with the same drug or drugs four patients in one family within forty days, many more victims might have been added to the list.]

In planning and carrying out her homicidal acts she was, she asserted, always calm and clear-headed. After administering the poison she always experienced great relief and went to bed and slept soundly. In one case she is known to have taken to bed with her the child of her victim after administering the fatal dose, and in another, according to her statement, she lay on the bed with the patient whom she had just poisoned "and had a long sleep." When it was too late to undo her work "she would work like a Trojan to save the patient," although in one case, at least, she took this opportunity to repeat the dose and make sure of her victim. In two instances she claimed to have been seized with compunction, and left the case after sending for another nurse. One of the patients was saved in consequence. For much of the time during the interviews she manifested a lack of seriousness and often a levity which was in marked contrast to

what was to be expected of one who had been brought to confess so many heinous crimes. She understood clearly that she had done wrong, but did not manifest the slightest sign of remorse for her crimes, not, as it seemed to us, through any spirit of bravado but for the reason that she did not comprehend the enormity of her acts; she professed total indifference as to the outcome of her trial except that she preferred the prison to the asylum. Electrocution apparently had no terrors for her. "When I try," she said, "to picture it, I say to myself, 'I have poisoned M., my dear friend; I have poisoned Mrs. G.; I have poisoned Mr. D. and Mrs. D.' This does not convey anything to me, and when I try to sense the condition of the children and all the consequences I cannot realize what an awful thing it is. Why don't I feel sorry and grieve over it? I cannot sense it at all."

The question as to what prompted her acts was the signal for the shameless recital of a story of sexual excitement occurring in the presence of a dying person, as the motive—a statement which was all the more startling by reason of the absence of sexual immorality from her history, so far as could be ascertained. For a time we were of the belief that irresistible sexual impulse might be the real explanation of at least some of her acts, but on further examination, her representations as to the nature of this impulse and the conditions attending it were found to be so conflicting and so at variance with any known form of sexual perversion that feigning was suspected, and at the last interview, she admitted, as stated in our report, that she did not know why she killed these people, and that it was not from desire to experience sexual excitement. It was finally apparent that the story was a pretense throughout, concocted, and most unnecessarily as it happened, in order to prove her insanity and irresponsibility by reason of irresistible sexual impulse. There seemed to be a nearer approach to the truth in the statement that for at least the year past she had been tempted to do all sorts of criminal acts, and during the preceding summer especially she had "let herself go." Among others she had strong impulses to set fires and could get no relief from her feeling of uneasiness but by yielding to the temptation. It is a fact that when once they were started, however, she worked her hardest to put them out. She finally said, in regard to her homicides, "I seem to have a sort of paralysis of thought and reason. Something comes over me, I don't know what it is. I have an uncontrollable desire to give poison without regard to the consequences. I have no objection against telling my feelings, but don't know my own mind. I don't know why I do these things." The last statement carried an air of truth with it in the manner of its telling and seemed to accord well with her general mental condition.

So far from having delusions of enmity or persecution, she spoke of most of her victims as her friends, and denied any hostility on either her side or theirs. In fact, all our efforts failed to reveal anything of the nature of delusion or hallucination in her mental condition at any of the interviews. Her behavior also was the opposite extreme of that of most patients with concealed delusions, whose reticence and distrust are marked features.

The main points in the summary of our opinion as to the prisoner's mental condition, which concluded our report to the attorney-general and counsel for the defence, were in substance as follows:

" 1. The prisoner, J. T., comes of a family in which intemperance and mental weakness and disorder are prominent disease features.

" 2. Her utter lack of moral sense has been evident from childhood in her incorrigible proclivity to falsehood, dishonesty, mischief-making, general unreliability and probable theft. The good moral, mental and religious training which she received in her youth resulted in no modification of her character, and were practically thrown away on her in that respect.

" 3. Her moral insensibility is further apparent in the absence of sense of fear before, during or after the commission of her crimes, and of remorse, sorrow or genuine affection at any time. This defect is even more forcibly shown by the fact that her chief victims were her especial friends.

" 4. Her lack of any appreciation of her situation, her levity under such circumstances, and her inability to realize the enormity of her deeds are strong evidences of mental weakness.

" 5. That an irresistible propensity propelled her to crimes of arson and murder is shown by the great frequency and variety of such acts and her continuance in them, regardless of consequences.

" 6. There is an absence of any apparent motive for her criminal acts in some cases, and inadequacy of motive in many of the others. This is shown in the total lack of evidence of pecuniary gain or satisfaction in revenge as a rule, except minor thefts and transient enmity. These would be powerless with sane criminals as incentives to habitual homicide.

" 7. The prisoner's disease-history and present mental state correspond with a well-recognized form of mental defect of a moral type due to congenital degeneration, in which there may be little or no intellectual disturbance that is apparent to the ordinary observer.

" Therefore, we are of the opinion that she was insane and irresponsible at the time of the homicides with which she is charged, and is so now ; that, her disease being constitutional, she will never

recover, and that if ever at large again she would be a constant menace to the community."

The salient features of the case which indicated more especially irresponsibility were: lack of moral understanding, of natural feelings and of the ordinary motives for conduct including criminal acts, also the general absence in her of sufficient self-control to restrain her from crime, and her disregard of consequences as shown, for example, in continuing to poison patients in full knowledge that her guilt in other recent cases was suspected; by her desire to confess her guilt at the outset; her indifference to her fate, etc. These facts seemed to us to evidence her inability, both to help doing what she did and to be affected by punishment, conditions which are the best tests of accountability.³

The results of the anthropometrical measurements and physical examination of the patient by Dr. H. W. Miller, pathologist of the Taunton Insane Hospital, are as follows:

Physical Examination.—Height, 5 ft. 3 in.; weight, 166½ lbs.

A well developed and well nourished woman. Hair black, streaked with gray. Complexion somewhat sallow.

Cranimetric Examination.—Circumference of head, 51.8 cm.; antero-posterior diameter, 17.8 cm.; greatest transverse diameter, 13.6 cm.; cephalic index, 77.6 cm. (slightly dolichocephalic); naso-occipital arc, 31.5 cm.; bregmato-lambdoid arc, 11.8 cm.; binauricular arc, 31.5 cm.; binauricular diameter, 11.8 cm.; facial length, 11.7 cm.; mid-frontal diameter, 13.5 cm.; breadth between pupils, 6.6 cm.; length of ears, right, 6.4 cm.; length of ears, left, 6.5 cm. These measurements are all well within physiological variations.

³ The ability to discriminate between right and wrong as the sole test of responsibility fails in this case for the same conclusive reasons that have rendered it valueless in a great many others, and have caused it to be rejected by all alienists and most jurists of to-day. It takes no cognizance of the power of personal restraint and inhibition. An insane person, as all psychiatrists know, may know right from wrong in the abstract, may understand that a certain act is unlawful and wicked, but may be unable to control himself through weakened will power (the result of hereditary defect or disease), or when goaded to desperation by persistent delusions and hallucinations. "In fact, the cases of insane criminals in whom there is no knowledge of right and wrong or who do not know the nature and quality of the acts they commit are very few indeed."—(McPherson.) It was one of the highest legal authorities of England, Lord Chief Justice Cockburn, who declared twenty years ago that the power of self-control when destroyed or suspended by disease was an essential element of responsibility.

Ears: detail well defined without stigmata.

Eyes: brown, palpebral fissure of normal width. No limitation of normal field.

Palate: low and broad but symmetrical.

Nose: no deviation or anomaly.

Teeth: false set in upper jaw, those in lower jaw regular.

No facial asymmetry.

Extremities: symmetrical. Forearms, 40.2 cm. from elbow to tip of middle finger. Middle finger, 10 cm. on both hands, last phalanx of thumb 3 cm. on both thumbs. The little finger on each hand is flush with the last joint of the third finger. Finger nails normal.

No general body anomalies.

Special senses: hearing acute; smell and taste normal; sight unimpaired; color-sense keen.

General sensory condition: Examination of tactile, pain, pressure, and muscle-sense offers no abnormality.

No errors of motility.

No trophic disturbances.

General feeling of well-being.

Reflexes: nothing of significance. Knee jerks: sharp. Normal plantar flexion. Pupils equal and regular, reacting promptly, directly, and consensually.

A few tremors of tongue and extended fingers were present at time of examination but were transient.

Respiratory and circulatory systems reveal nothing of note.

Abdominal organs healthy.

Menstruation irregular for two years (every two weeks). Previous to that every fourth week.

Whatever view may be taken of this remarkable case, there can be no question that the moral monster thus far depicted is a striking illustration of so-called moral insanity, a condition described in most works by recognized authorities, from Pritchard to Kraepelin and Wernicke, as a probable form of mental disease or defect. Its existence as a definite morbid condition has been repeatedly questioned, and its name criticised as inadequate and incorrect. "Moral insanity," however, has so far held its own that all alienists of to-day recognize that the term means a certain condition or kind of mental abnormality which is *sui generis*. It fits no other form of mental unsoundness. The progress of psychiatry has seen so many nosological terms discarded that it is remarkable that "moral insanity" should remain and flourish, thus demonstrating its practical utility as a term and its real value

as a morbid mental condition. "Moral imbecility," a more accurate designation in some respects and in use by certain authors, apparently has not been found sufficiently descriptive of every grade of moral lunatic to secure general adoption. The true understanding of moral insanity has been greatly obscured by confounding it with purely symptomatic conditions, syndromes and stages of other forms of mental disease; for example, the moral obliquity unaccompanied by apparent intellectual perversion which sometimes occurs as a distinct stage of dementia præcox, or as an equivalent of the "maniacal" phase of manic-depressive insanity, or as the prodromal stage of general paresis.

Moral insanity belongs to the group known as insanities of degeneration, and is better termed *degenerative insanity of the moral type*. It should be exclusively reserved to designate a congenital, primary, constitutional and permanent mental condition affecting the moral nature and unassociated with evident intellectual impairment. These patients have good memory and understanding, ability to reason and contrive, much cleverness and cunning, and a general appearance of rationality, coexistent with very deficient control, absence of moral sense and human sentiments and feelings, perverted and brutal instincts, and propensities for criminal acts of various kinds which may be perpetrated deliberately and cleverly planned, yet committed with little or no motive and regardless of the consequences to themselves and others. This latter point is important as indicative of a perversion of the fundamental instinct of self-preservation (Kellogg). In their general conduct, also, these individuals are rarely influenced by the same motives that govern sane people, whether criminals or not, and it is often difficult to see what the motive is. They commit crime for crime's sake. Esquirol's remark that "crime is a means for the criminal and the end for the lunatic," is especially applicable to these cases. In J. T. most of the classic manifestations of the disease are typically and faithfully reproduced. That none of the physical stigmata of degeneration should be present is noteworthy but not exceptional, as Lombroso,¹ for example, finds anomalies of the cranium and physiognomy absent in 58 per cent and 64 per cent of moral lunatics, respectively. Of that dis-

¹ "L'Homme Criminel." (Tr. from the Italian.) 1895. Vol. ii, p. 8.

tinctive and negative feature of the disease, the almost complete absence of intellectual impairment, Hack Tuke⁴ goes so far as to say, "It is perfectly certain that it may be practically impossible to detect the intellectual flaw, and yet a physician may be driven to decide that a person is insane," and it is a recognized fact that, while a few of this class fall short of the average individual in intelligence, many are fully up to it and a limited number even surpass it.⁵ Others urge, and our experience inclines us to agree, that careful investigation will always reveal intellectual involvement in genuine cases, sooner or later, and such patients certainly share some traits in common with the imbecile; witness their characteristic propensity, which seems to be a necessity from which they can not escape, for telling-purposeless lies and, like children, inventing fabulous tales. This is marked in J. T., but still more in this line of mental defect is her innate and irresistible bent for trouble and mischief-making which she finally carried to such an extent as to deliberately alienate her friends and benefactors among physicians—a weakminded senselessness of conduct which showed fatal disregard of her own interests. If her friends were blind to her glaring faults and dangerous propensities it is hardly to be wondered at that they should fail to recognize that underlying "intellectual defect [in moral insanity] which," to quote Westphal,⁶ "is of a peculiar kind, is often concealed under a mask of perverted moral sense and requires time and patience on the part of the physician for its detection." J. T.'s fundamental intellectual weakness is further and strongly emphasized in her hospital history, as will be seen.

But in what respect this case and others of its class differ from mere criminality is, of course, the main question. We can, at the start, readily eliminate the occasional criminal, the criminal by passion, the habitual, professional criminal; but to differentiate between the morally insane and the instinctive criminal, especially in the light of Lombroso's exposition of their analogy, is a difficult matter. It is this question that is and always will be a battle ground for the criminologist, the alienist, and the jurist, in spite

⁴ Dict. Psychol. Med., p. 814.

⁵ McPherson, Mental Affections, p. 301.

⁶ Berl. klin. Wochenschrift, 1878, No. 15.

of Lombroso's conclusion that both views are right and that they are one and the same thing. To our mind the very term implies a mental flaw, for what is instinctive criminality but perverted instinct, the very nature of which has made these persons lifelong enemies to society, and has rendered impossible a natural manner of feeling and acting, to the extent that in spite of good education and environment, habitually wrong conduct and actual crime become right to all intents and purposes and the ruling principle of life? It seems to us to resolve itself into a question of degree, and if Lombroso and his school should gauge instinctive criminality by the proportionate extent in each of these individuals of ordinary crime and culpability on the one hand and of mental defect and perversion on the other, wide differences would certainly appear which would compel them to classify many as indubitable criminal lunatics, and others as mere criminals, leaving an intermediate or borderland class whose condition cannot be satisfactorily differentiated. This is very evident in the enumeration by the great criminologist of many and marked symptoms which he admits that subjects of moral insanity share with those whom he acknowledges and classifies as insane criminals.

No absolute rule can be laid down by which we can differentiate between moral insanity and moral depravity, and there is no other disease in which the study *ensemble* of its manifestations is so important. One may single out separate acts or sets of acts of a subject of moral insanity, and see in them merely the manifestations of ordinary criminality. It is only when these are viewed in their entirety and in relation to the heredity, environment, education, social status, mental and physical organization and disease-history of the individual himself that we can decide how far his acts are under his control, and whether or not he is insane and irresponsible. It would be as questionable to label and treat as insane certain of the least pronounced subjects of this class as it would be wrong, both ethically and scientifically, to stamp as merely culpable criminals and to send to prison the extreme and typical ones like J. T. The former, whose condition approaches more nearly the borderland of sanity, are for that reason more susceptible to punishment and other incentives to right conduct. They bear prison life well and are none the worse for the discipline. The well marked, distinctly pathological cases, however,

are for the most part turbulent, crafty and unmanageable in the extreme, cannot be affected by punishment, greatly interfere with the discipline of others and are the despair of prison officials. Because of their defective control and susceptibility to criminal impulses, the associations and punitive measures of the prison also tend to make them deteriorate faster and to grow more intractable. The ordinary hospital for the insane is equally unsuitable for them, as they unsettle and excite their fellow patients and interfere with their management and improvement. Besides, association with criminals adds another terror to insanity. The special asylum for the criminal insane is, therefore, the only proper place for them, and it is still another argument for their insanity and irresponsibility that every criminologist advocates such confinement for them with this, the worst, class of the insane. There is, unfortunately, no special provision in Massachusetts for the care of female criminal insane, as their number is so small.

On June 3, 1902, J. T. was tried and found not guilty by reason of insanity, and thereupon committed to a state insane hospital for life. Her attitude at the trial was more that of an interested and appreciative spectator than of a prisoner on trial for her life.

Through many visits to the patient during the past two years and free access to the records of the Taunton Insane Hospital where she is confined, we have been able to follow her case, which has undergone a striking development, as will be seen.

On her admission she talked freely about herself to the hospital physicians and, although she showed her inborn tendency to deceit and falsification in many ways, the fact that she had no longer anything to gain by misleading others with regard to her mental condition gives a certain weight to the most consistently maintained of her statements. She reluctantly acknowledged, as she does to-day, that she poisoned 31 patients. She would not say that she was not insane but wished to know what her insanity consisted of. "I don't appear like these other patients. I can read a book intelligently, I don't have bad thoughts, so I don't see where moral degeneracy comes in." When asked if she had noticed any change in disposition in recent years she said, "No; I feel absolutely the same as I always was. I might say I feel hilarious, but that may express it too strongly." As to the feeling of fear, she replied, "As far as I have any knowledge of that feeling, I never showed it. I cannot recall any time that I was frightened. I used to be the wonder of my mother. I have never felt it throughout this affair." She has certainly never been affected except pleas-

urably by sudden explosions or threats of patients on the wards from the first.

During the first year of her life at the hospital she was, as a rule, sociable, quiet, cheerful, amiable and spasmodically helpful, and spent much of her time in reading. The change from the seclusion of the jail to the more active life of a large hospital ward interested her, and the air of discipline was effective in temporarily repressing her tendencies. In this period she grew fat, was in excellent physical condition, and wrote her sister: "Just think, I've been here a year and find myself fond of the people and warmly attached to the place in some ways. Yes, we are well cared for, kindly and considerately." She soon developed a fondness for the company of the patients, especially the most demented, in preference to that of the nurses.

The following statement by Dr. J. P. Brown, the Medical Superintendent, is the hospital record of April 22, 1903, about a year from the time of her commitment. It practically represents the opinion of the entire medical staff as to her condition at that time:

"My study and observation of J. T. since she has been in the hospital gives me the opinion that her mental disease should be classed as moral or affective insanity. She seems to me to be wholly devoid of moral sense, or a clear apprehension of what is right or wrong as to her relations to other people or to society. In all my conversations with her respecting the homicides, which she freely admits, she has expressed no remorse, regret or sorrow for any of them, but rather a sense of pride and satisfaction that the number was so large as to give her distinction above all other poisoners whose histories are known.

"This lack of pity and sorrow for others in trouble or distress has been evident whenever any difficulty has occurred on the ward between patients, or between a nurse and patients. At such times she has manifested a good deal of glee, and laughed like a silly child, but never has expressed any sympathy or pity for the patient or person in distress or trouble. Trouble or pain for others seems to excite in her merriment and joy instead of sorrow.

"In her association with other patients she has exhibited a special fondness for the demented, and especially for one who has openly practiced self-abuse; and once she got into bed with her after the patient had been put to bed for the night.

"In speaking of the homicides, she says that at the time she committed them she was not conscious of committing any crime or doing any wrong for which she should justly be punished; that the thought of doing wrong did not enter her mind, and gave her no concern whatever; and at the present time she apparently has no comprehension that the decree of the

court in committing her to the hospital was right and just, and must be obeyed; and she asks for her freedom as though it could be granted on the same basis as that of any other patient.

"Recently, during the past three or four months, she has seemed more moody and emotional, either depressed or exhilarated at short intervals, and has exhibited less self-control, and with it she gives one the impression that her mind is weakening, and that she has less mental grasp of past and present events, and of her relation to her surroundings. Of this she seems to be painfully conscious herself. She has been observed to be laughing immoderately to herself, and when it is noticed by others she blushes as though she would conceal it, and seems confused.

"This weakening of her mind as time goes on is what is to be expected, and will probably continue. In every case of moral or affective insanity there must be more or less impairment of what are called the intellectual faculties in distinction from the moral, especially reason, and judgment to decide ethical questions presented to the mind, otherwise the moral obliquity and perversion would be controlled, and the criminal act averted.

"From my examination and observation of her since she has been under my care, and my knowledge of her previous history as made known to the court before her sentence, I am of the opinion that she is insane and irresponsible, and that her mental disease resulting as it probably does from ancestral vice and degeneracy, which her family history so far as known clearly indicates, is incurable."

Even at this time an undercurrent of suspicious thought came to the surface in doubts of the intentions of people toward her. She even wrote her sister in Chicago, "Sometimes it strikes me you are one of the gang. If you have fooled me also I shall say d—n. Oh d—n anyway."

Her indifference to the character of her surroundings, from the first, her frivolous talk, contradictory sentiments, frequent, causeless laughter, open pleasure at the trouble of others, glee at situations of obvious personal discomfort to herself, and general and utter lack of more than occasional seriousness at her situation, present and future, or actions in the past, show most plainly a dominant tone of mental weakness such as is only to be found in the imbecile. This is well shown by extracts from her letters: "I've had a real good time in the sewing-room for the past two days. I never can say that I like to do a thing until I get some fun out of it, and I really had quite a lot of fun. I suppose it has been here [in me] ever since I have been here, but I haven't seen it. . . . Truly, I had a great, good time at the Barnstable jail after the first ten days, even then I did not have a bad time." June 28, 1903, referring to an incident when on a visit to a friend: "It has left me rolling on the floor [with laughter]. I begin to feel like rolling on the floor now. I like to feel that way. I am having a big time, big" [in the sewing room]. March 8: "Don't ever ask me in your letters what I mean by what I write, I don't know myself—I'm talking through my hat. Nellie told me once that you said I

made you dizzy when I got to talking and laughing. I laugh now, Mary. I nearly bust myself laughing this past week. I don't like the locality I live in either." July 8, 1903, after greatly disturbing the ward at night with a violent fit of screaming for no obvious cause: "I meditate and praise and pray all the time, and shall be ready at the end to take vows and become Mother Honora of the Seven Wounds." In one of her thoughtful moods she writes, "I do grieve to be in this state, I do, when I have thought force enough to think it out. When I am discontented I ask myself what I want and I don't know. A change of any kind seems torture to me even to think of and why I want to live this way I don't know. . . . Never mind, Mary, the fact remains that I have had a bully time in life in spite of everything." "I never feel that I am having a real good time when I'm behaving." Oct. 4: "I am still furnishing material for the drama of the 'unpopular lady.' I do wish I could behave myself for it all tires me so now, but I shan't probably till my last breath."

By December, 1903, she had become generally antagonistic toward all about her, as well as highly suspicious and irritable. She wrote voluminous tirades against the hospital and its management, treatment of patients, etc., making wholesale and absurd accusations and denunciations, some of an entirely delusional nature. She writes her sister, for example: "Do you know, the supervisor put some poison in my tea. A patient saw her and told me and I didn't touch it. The lady heard the supervisor say she had fixed J. T. this time." Apropos of special diet offered her she writes, "No, I thank you, Dr. Brown, I will stick to bean soup and keep safe above ground and out of Dr. Miller's [the pathologist's] hands. Some steak strikes some people right. This steak is sure death." Again, in a letter to her former counsel, she speaks of him as one of the "gang" who is managing her case, all the physicians and nurses of the hospital being included. She continued to write in this strain although told that such letters would no longer be forwarded. Dr. Brown also reports the following statement made to him by the patient: "I don't wish to associate with the low and vulgar people that are employed in the sewing room. They talked about me before the other patients in a low and vulgar manner." She then described a revolting scene, impossible on its face, as enacted by the two employees in charge, self-respecting, modest women, and gave a circumstantial account of talk and actions on their part of the vilest kind, in a manner highly suggestive of delusions of persecution and hallucinations of hearing. At this time, also, she is reported to have grown very neglectful of her personal appearance, even having to be told to wash her face. She had become very abusive to the nurses, defying their authority and inciting patients to do the same, going so far as to shout to a melancholic whom the nurse was trying to feed, not to eat the food as it was poison. Her physical condition had fallen off greatly. She had lost fifty pounds in weight in a few months, in consequence of her refusal of food because of false belief in regard to it. Owing to her weak condition she was removed to the infirmary. There she became more disturbed as well as destructive and

dirty in habits, enraged and somewhat violent, threatening to kill her nurses, etc. By February, 1904, she was greatly emaciated, having lost over eighty pounds, or about half her normal weight, and was so weak that forced feeding with the tube was resorted to for several days, since which time she has eaten voluntarily, but just enough to avoid being fed again. The artificial feeding was employed only after persistent persuasion and every possible measure to induce her to eat had been tried, including special articles of diet from the superintendent's table. A thorough physical examination revealed no evidence of bodily disease.

On a recent visit, March, 1904, she was found by the writer in good spirits, talking volubly and aimlessly at the nurses. She began at once on a tirade against the hospital, its officers and all its belongings. She insisted that everything was "rotten," that the meat was "embalmed" beef, etc., etc. She persisted in these complaints after being told that we had just eaten some of the dinner provided for her which we found nutritious and palatable. Everything was filthy, she said, even the brick walls which must be "saturated with the filth of years"; the water supply (which is taken from an artesian well) was "polluted with sewage"; the vegetables were "rank poison." She spoke rather anxiously about a general feeling of numbness, and asked what was the cause of it. She was entirely inaccessible to explanation, argument, or even positive proof as to the impossibility of her statements. Occasionally she would burst out unexpectedly with peculiar and piercing shrieks of laughter which would seem impossible to one in her weak condition.

Many of her indiscriminate and senseless charges seemed to be rather the expression of an insane malignity toward everyone than the outcome of genuine belief that they were true. But we were, at the same time, convinced beyond a doubt that she was also suffering from strong and genuine delusions of persecution by poisoning, because her belief in this regard so consistently influenced her conduct that her refusal of food had practically reduced her to a skeleton, and repeated, forcible feedings had no effect in changing her convictions. Her persecutory ideas vary in strength from time to time, but the delusions of suspicion from which they spring remain unshaken. The following letters evidently coming from the heart, are characteristic of delusional insanity;

"MARCH 15, 1904.

Dear —: I am the victim of nerve paralysis, the result of food. I have to eat or I am fed with a tube with nerve-paralyzing food that I choose from the tray. Oh, I think that you and — were criminals to put me through this. It was an awful thing to do to any human being and I have my opinion of everybody who takes a hand in it. I think it has been a most noble (?) piece of work. I think as the nerves of my body get more benumbed my brain becomes clearer to the outrageous course that has been taken with me. I suppose the next thing, something will be given to put me out of the way altogether. That would be a mercy to this

J — T —."



FIG. 1.



FIG. 2.

FIGS. 1 AND 2.—Appearance during first year at the hospital.



FIG. 3.



FIG. 4.

FIGS. 3 AND 4.—Appearance during second year at the hospital, after a period of refusal of food due to delusions of poisoning.

"TAUNTON LUNATIC HOSPITAL, July 4, 1904.

DOCTOR STEDMAN: I wish to inform you that I am alive in spite of the deleterious food which has been served to me. Many efforts have been made to poison me in this institution of that I am very sure. I am thin and very hungry all the time. Every nerve is calling for food. Why can't I have help? I ate a pint of ice cream and four oranges Saturday and Sunday. That was all.

J — T —.

NORAH KELLEY."

It is worthy of note that, as would be expected in an insanity of the hereditary-degeneration group, the mental deterioration takes in this case the form of delusion rather than dementia.

In this after-history we find, brought into bold relief, the inherent, underlying defect of weakmindedness which was noted, but only obscurely seen earlier, for want of opportunity for proper observation, and also the outgrowth therefrom of pronounced intellectual change in the shape of positive delusions. These, together with the other and characteristic manifestations, afford the strongest confirmation of the patient's insanity, intellectual and moral.

The development of a delusional state in the course of moral insanity is, apparently, not uncommon, and affords another and strong argument for the contention that intellectual involvement in some form is an essential feature of the disease, or, in other words, that there is no such thing as a mental disorder affecting the moral sphere alone. Delusions are reported as occurring late in the disease, if at all, suggesting a secondary condition or stage. Comparatively few descriptions of moral insanity include this feature, perhaps because the few cases that reach the hospital for the insane either are not closely observed late in the disorder or, if followed up, are not recorded, and thus the picture of the entire disease-process, so to speak, as revealed in a certain proportion of cases is left unfinished. Another and, to our mind, weighty reason is that most of the morally insane are sent to prison where they rarely come under the observation of alienists. When their insanity has fully and unmistakably developed they are perhaps transferred to institutions for the chronic or criminal insane, where they pass for cases of chronic delusional insanity or dementia. That this view is not overdrawn is plain, even from Lombroso's¹

¹ Op. cit., vol. ii, pp. 20-26.

accounts of the history of a number of prisoners of this class with reference to their intelligence, in some of whom delusions of suspicion and persecution are noted and in others a decided paranoiac tendency is evident. Schüle¹ says of them, "they may develop neuroses, somnambulism, periodical insanity, hypochondria." Dagonet² even finds acute delirious mania and hallucinations in the course of the disease. Arnaud³ concludes a recent and instructive chapter on moral insanity with an account of a typical case with a late manifestation of "delusions of persecution more or less systematized and hypochondriacal ideas." In the opinion of the distinguished and practical psychiatrist, Hack Tuke,⁴ there can be no doubt that in a number of cases of seeming moral insanity there develop *in course of time* definite delusions, especially of suspicion." According to Folsom,⁵ "it is the rule that their doubts, imaginations and suspicions deepen into active insane delusions, their mental impairment advances to noticeable dementia, their moral deterioration goes on to such a degree of depravity that everybody wonders why they had not been seen to be insane long ago, and they are secluded in an asylum or elsewhere."

Further research in this direction can hardly fail to enlarge our knowledge of this intricate disorder and its affiliation with paranoia.

The striking parallelism between this and the once famous case of Christiana Edmunds, who was pronounced to be insane by Maudsley and several other distinguished alienists, is sufficient excuse for referring to it here. The extract is taken from an account of the case⁶ quoted by Blandford and cited as typical of moral insanity:

"Christiana Edmunds is an example of a person *utterly devoid of moral sense or moral feeling* in matters relating to herself, though theoretically she doubtless knew that murder was a wrong thing. That she knew perfectly well what she was doing, in purchasing poison and disseminating it broadcast through the town

¹ Geist. Krankheit (1881).

² La Folie Morale, 1878.

³ Ballet: Pathologie Mentale (1903), p. 652.

⁴ Dict. Psychol. Med., p. 814.

⁵ Mental Diseases, Boston, 1886, p. 144.

⁶ Blandford: Insanity and its Treatment. 3d ed., p. 228.

by means of poisoned chocolate creams and that she *knew she was therein doing wrong* were equally beyond dispute. Her whole conduct before the crime, and her *perfectly rational conversation* in jail, clearly proved she could have taught a school-room of children in the Ten Commandments, and explain to them clearly that it was a wicked act to break any of them, and a most wicked act to break the Sixth Commandment. But no one could have talked with her in jail without being convinced that in her own case she had *no real feeling of the wicked nature of her acts*, and that she would have poisoned a whole city-full of people *without hesitation, compunction, or remorse*. Indeed, it may be doubted whether in her later experiments she was really so much influenced by the *inadequate motive*, which no doubt instigated them at the beginning, as by *a morbid pleasure in poisoning for its own sake*, and in the sensation which her secret crimes excited. The terrible story of *insanity in her family* furnished the real explanation of her state of mind; she had the heritage of the insane temperament."

Dr. Orange, the Superintendent of Broadmoor, under whose care Christiana Edmunds has been ever since her trial, says, "that she has been *regarded as of unsound mind by all the medical officers of the asylum* who have been here during the last five years. She is at present fairly tranquil, and her conduct is much better than formerly; but I do not regard her as being sane, or fit to be trusted to keep out of mischief. She formerly had *periods of depression alternating with periods of subacute mania*, but latterly her condition has been more equable." "

" The italics are ours. H. R. S.

SOME METABOLISM STUDIES.
WITH SPECIAL REFERENCE TO MENTAL DISORDERS.

By OTTO FOLIN, Ph. D.,
WITH THE COOPERATION OF PHILIP SHAFFER, B. A., AND MORE RECENTLY
WITH THE ASSISTANCE OF L. A. HILL, B. A.

(Continued from Vol. LX, p. 732.)

Table No. 8 gives the averages of the urinary constituents obtained from seven normal persons, each of whom was kept on the liquid laboratory diet for one week. At the bottom of the table is given the final average of all, i. e., the average of thirty-five 24-hour quantities of urine. The comparative uniformity in the various ratios and percentages shown by these normal urines should again be noted here. Any striking deviations outside the limits set by these control persons obtained from similar feeding experiments with patients are held to indicate the presence of one or another form of abnormal metabolism. The validity of such a conclusion depends of course upon the accuracy with which the seven control persons represent the normal variations.

EXPERIMENTS WITH PATIENTS.

On the following pages will be presented analytical material obtained by similar studies on patients. The original intention was not to publish these investigations until a fairly large number of cases corresponding to each of the psychiatric groups had been obtained, and then to arrange the results according to such a classification. But as the investigations have broadened in scope and the analyses have become more complete, the earlier cases, less fully covered by the analytical work, can no longer be used to advantage in connection with the later, more completely studied cases. For this reason and also on account of the fact that the investigations have so far failed to show any characteristic metabolism peculiarities corresponding to the different psychiatric

groups of cases, it has seemed best to arrange the tables largely in accordance with the analytical results alone. One important exception is, however, made in regard to the cases of general paralysis. This comparatively well defined disease has yielded the most interesting results and the cases representing general paralysis are therefore given first and consecutively.

Tables 9-12 represent an unusually prolonged series of feeding experiments carried out with a patient suffering from general paralysis.

"H. C. C. Age 49. Physical condition: decidedly undernourished. In all three periods marked diarrhoea, about the same in the three. Diagnosis: general paralysis. Physical signs: marked speech defect. Unsteadiness of gait. Knee-jerks exaggerated. Argyll-Robertson pupil. Mental state: dull, marked memory defect, especially for recent events. Inability to apply mind. Indifference. In other words, a case of simple dementia without active symptoms. It is always difficult to say whether a general paretic of this type is in an active process, but looking back over four months the patient has deteriorated very much both mentally and so far as his speech and gait are concerned, but there is no reason to think that the process was not of the same intensity in the three periods."—H.

The low absolute amounts of total nitrogen, as well as of other urinary constituents recorded in table 9, must be accounted for by the marked diarrhoea with which the patient was troubled during this experiment. At first it was thought that this fact was also the cause of the striking deviations from the normal in the various relationships among the urinary constituents, although it did not seem clear why diarrhoea should lead to such a tremendous increase in the elimination of ammonia, or why the nitrogen-phosphate ratio should sink from the normal figure 24 to 17 while the nitrogen-chloride ratio remained normal.

Thinking that the diarrhoea was only temporary, we intended to repeat the experiment later in the season, but as it continued and did not show any signs of abating or of yielding to the drugs administered, we took up the patient again a week later. This time the patient was kept on the laboratory diet for eleven days, giving us nine 24-hour quantities of urine, the analyses of which are recorded in table 10.

(It will be noted that in this case, as in several others, the night urines and the day urines from three or four successive days have been combined and analyzed separately. This was done in order to learn whether the day urines and the night urines were noticeably different.)

No. 8. Averages of Tables 1-7.

No.	Sp. Gr.	Ratios.										Per cent of total N ₂ .										
		100 N ₂ :					100 SO ₂ :					Urea.	NH ₃ .	Kreatinin.	Uric acid.	Rest.						
		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₂ .	Neutral SO ₂ .															
		Acidity.		Indican.	N ₂ mg. in 50 cc.		Urea, gms.		NH ₃ cc. in 100		Kreatinin, gms.		Uric acid, gm.									
		Total	N.		Total	N.	Total	N.	Total	N.	Total	N.	Total	N.	Total							
	cc. in 24°	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total				
Huyler.	1645	3.44	3.06	6.9	1.88	.159	15.1	28.98	1.26	.482	.154	104	359	112	46.6	20.4	12	89.4	2.6	3.3	1	2.7
Brown.	1239	4.5	3.65	6.06	.29	.215	18.24	34.71	1.53	.438	.146	611	2773	123	33.4	20	6.1	86.84	3.32	3.23	.83	3.06
Bogart.	1812	3.89	3.25	6.28	.19	.165	16.6	30.64	1.57	.38	.11	554	2304	114	37.9	19.5	4.9	87.00	5.1	3.6	.63	3.1
Scott.	1196	3.82	2.93	5.91	.253	.18	14.8	27.34	1.45	....	....	699	252	131	39.9	19.3	6.2	86.80	4.7	3.63	.54	5.0
Jones.	1444	3.90	3.00	5.72	.245	.16	16.4	30.32	1.57	.314	.105	621	313	123	34.9	19.3	5.2	86.20	4.5	3.5	.63	5.3
Campbell.	1242	3.96	2.95	5.6	.194	.125	14.9	27.45	1.77	.438	.146	575	284	134.6	37.2	20	4.5	86.7	5.0	4.5	.98	2.8
Dr. P.	1394	3.76	3.03	5.49	....	....	15.94	29.73	1.43	.338	.127	664	....	124	34.9	19	....	87.86	3.54	....	.82	....
								13.90	.77	....	....	....	....					90.9				
Average	1425	3.57	3.13	6.00	.227	.167	16	28.74	1.55	.393	.131	623	324	123	37.8	19.7	7.1	87.46	4.94	3.63	.78	3.75
								13.86	.69	....	....	....	....					91.7				

No. 9. Name, Mm. H. C. C. { Weight May 28, 49.700 k.
 " June 4, 49.600 k.
 Loss 100 g.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ mg. in 50 cc.	SO ₂ mg. in 50 cc.	Cl ₂ mg. in 10 cc.	Etheral SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ mg. in 5 cc.	Urea, gms.	NH ₃ co. N	Kreatinin, gms.	Uric acid, gm.	Acidity.		Indoan.	Ratios.				Per cent of total N ₂ .					
												Mineral.	Organic.		100 N ₂ :		100 SO ₂ :		Urea.	NH ₃ .	Kreatinin.	Uric acid.		
															P ₂ O ₅ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₂ .					Neutral SO ₂ .	
April	cc. in 24°	Total	Total	Total	Total	Total	Total	N.	N.	N.	N.	Titrated.												
	21	100	113.6	56.7	14	2.6	61.6	10.69	1124	.824	.167	241	...	8	16.2	19	45.3	83	12	....	66.	20.8	4	
28	615	1.23	1.40	3.43	1.70	.032	7.57	4.99	1.57	.906	.055	.84	324											
29	21	113	114	55	16	8	62.7	13.90	1374	1.06	.333	333	...	40	17.9	18.1	44	93	14	7	68.4	20.3	4.1	
	756	1.09	1.72	4.18	.241	.121	9.47	6.48	1.92	.334	.067	130	462											
30	20	104	118	52	17.8	10.4	63.4	14.59	1222	1.06	.143	277	...	40	16.8	18.2	41	92	15.5	9	69.94	19	4.06	
	770	1.64	1.78	4.00	.275	.160	9.76	6.81	1.85	.335	.047	117	336											
May	22	102	115	48	17.7	12.6	64.5	16.71	1122	1.027	.300	284	...	40	16.3	17.2	33	89	15.4	10.6	88.74	15	3.64	
	780	1.61	1.81	3.79	.279	.190	10.5	7.80	1.57	.334	.067	12.6	271											
2 Days	22.5	123	129	40	17.8	2.8	70	32.51	2044	1.89	.241	539	...	80	17.3	18.6	28	96.8	13.8	....	89.25	14.2	3.2	
3	1420	3.45	3.68	5.84	.505	.062	19.9	15.17	2.86	.628	.080	0	639											
4	20	120	123	....	17	....	66	21.25	1872	1.12	.147	363	...	..	13.2	1855	..	97.9	13.5	....	76.1	14.8	3.2	
Nights	980	2.35	2.40	....	.334	....	12.9	9.92	1.92	.416	.049	68	410											
Average	760	1.71	1.827	3.85	.268	.157	10.01	15.66	1.94	.97	.297	299	...	35	17	18.3	38.5	94	14.1	8.6	73.1	16.7	3.6	.7
										.56	.069	54	343								59.5			5.9

No. 10. Name, Mr. H. C. C.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .									
		P ₂ O ₅ mg. in 50 cc.	SO ₂ mg. in 50 cc.	Cl ₂ mg. in 10 cc.	Ethereal SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ mg. in 5 cc.	Urea, grms.	NH ₄ co. in N	Kreatinin, grms.	Uric acid, gm.	Acidity.		100 SO ₂ :							
												Mineral.	Organic.	Indican.	P ₂ O ₅	SO ₂	Cl ₂	P ₂ O ₅	Ethereal SO ₂	Neutral SO ₂	
May	cc. in 24°	Total	N.	Total	N.	Total	N.	Total	N.	Total	N.	Total	Titrated		Sum						
13	106	88.5	84.3	30	755	685	248	185	451	30	239	21.3	93.1	111.3	22.3	23	64.87	17.74	4.2	1.4	1.3
14	1850	1.42	1.27	5.55	1.06	284	280	5.96	0.83	451	...	...	...	...	...	...	82.6	16	5.8	1.4	2.4
15	12	50	37.8	33	1290	1.2	482	17.5	1.74	566	40	28.6	95.5	13.2	10.2	17.3	74.4	16	...	...	...
16	3075	3.07	2.33	10.27	1.72	445	406	10.76	1.61	123	30	29.1	70	135.6	17.3	30.8	90.4	16.4	4.1	1.66	4.6
17	1300	2.21	1.35	4.89	1.06	267	231	6.44	1.08	412	100	34.3	72.8	180	9.6	17.6	89.6	16.7	3.8	1.1	5.6
18	12	82	45.5	35	872	7	267	262	219	...	100	30	59.7	160	11.1	23.3	89.5	16.2	3.1	1.83	7.5
19	2100	3.36	2.23	6.70	1.83	376	327	11.23	1.49	62	100	27.9	53	155	16.4	12	88	16.2	3.9	1.4	8.3
20	2660	4.79	3.11	10.19	2.86	692	692	17.5	2.45	0	100	27.7	50	142	12.2	12.4	86.4	16.6	3.1	1.1	7.7
21	...	97.5	63.8	35	2454	1.74	664	607	...	...	200	...	...	...	...	...	...	...	...	...	...
22	2660	5.76	4.06	10.26	3.44	647	585	20.73	14.52	377	...	...	...	...	...	...	88.1	...	...	...	...
Average	1718	2.58	1.75	5.91	338	290	8.88	6.34	1.46	293	67	29.05	66	147	13.6	166	71.7	16.4	3.3	1.3	7.3
																	88.1				

No. 11. Name, Ma. H. U. C.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ , mg. in 50 cc.	SO ₃ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₃ , mg. in 50 cc.	Neutral SO ₃ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, gms.	NH ₃ , cc. N 10	Kreselinin, gms.	Uric acid, gm.	Acidity.		Ratios.					Per cent of total N ₂ .									
												Mineral.	Organic.	Indican.	P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .	Urea.	NH ₃ .	Kreselinin.	Uric acid.	Rest.			
May	cc. in 24°	Total	Total	Total	Total	Total	Total	N.	Total	N.	Total	N.	Total	Titrated.	100	30.6	18	40	170	8.7	27.7	72.7	14.8	3	1.4	8.2		
		17	120	76	31.2	19.3	6.1	1048	806	415	378	70	308														70	308
		25	1260	3.02	1.78	8.98	155	494	1.47	9	138	9	138														70	308
		26	20	181	94.8	43.8	9.5	14	879	751	342	340	308														240	308
27	905	2.87	1.72	8.92	172	267	8.83	6.19	1.28	28	114	29	369	120	28.4	20.6	47	188	10	15.5	72.48	14.8	8.3	1.3	6.3			
																										20	187.5	109	40	9	7.5	5	15.66	1082	778	345	128	287
Average	1045	2.69	1.87	3.91	1.67	3.92	9.39	14.77	966	778	350	361	305	150	28.6	19.9	41.6	144	8.9	16.1	73.37	14.7	3.07	1.3	7.56			
																										970	2.67	2.12	3.89	175	145	9.65	7.31	1.44	288	127	128	287

No. 12. Name, Mr. H. C. C.

1908. 24 hours ending	Ratios.												Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	100 N ₂ :				100 SO ₂ :				Acidity.				Indican.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	P ₂ O ₅ .	SO ₂ .	Kreatinin.	Urea.									NH ₃ .	Kreatinin.	Uric acid.	Rest.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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July	cc. in 24°	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total

No. 14. Name, Mx. W. { Weight, Nov. 11.....85.300 k.
 " " 15.....84.900 k.
 Loss 400 g.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ , mg. in 50 cc.	SO ₃ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₃ , mg. in 50 cc.	Neutral SO ₃ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, gms.	NH ₃ , cc. N	Kreatinin, gms.	Uric acid, gm.	Acidity.		Indican.	Ratios.					Per cent of total N ₂ .						
												Mineral.	Organic.		100 N ₂ :		100 SO ₃ :			Urea	NH ₃	Kreatinin.	Uric acid.			
															P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .					Neutral SO ₃ .		
Nov.	cc. in 24°	Total	Total	Total	Total	Total	Total	N.	N.	N.	N.	Titrated.							Sum							
11	23 1555	152.5 4.74	118 3.67	42.6 6.62	7.8 2.42	7.8 2.42	68.6 21.33	39.71 18.53	448 .627	1.98 .73	.690 .210	740 305	435	120	22.2	17.2	81	129.2	6.6	6.6	86.8	3	3.4	.48	5.8	
12	29 1180	184 4.34	147 3.47	46.2 6.45	9.4 2.21	6.6 2.15	77.84 18.37	34.24 15.98	429 .601	1.723 .64	.615 .205	731 283	448	100	23.7	18.9	29.7	125	6.4	4.5	86.84	3.26	3.5	1.1	5.3	
13	29.5 1250	17.5 4.37	148.6 3.72	54.7 6.84	8.6 2.15	6.2 1.6	77.84 19.45	36.60 17.08	410 .574	2 .74	.782 .254	720 275	445	100	21.9	19.1	24.6	117.6	5.8	4.8	87.85	2.95	3.8	1.3	4.1	
14	33 880	217.5 3.83	183.4 3.23	49 4.31	12.5 2.21	8 2.14	92.68 16.31	30.11 14.05	447 .628	1.422 .56	.323 .108	698 285	401	100	23.5	19.8	26.5	118.6	6.9	4.4	90.8	3.85	3.45	.68	5.89	
15	29 1250	170 4.25	143.9 3.60	53.2 7.27	10.4 2.60	7.5 1.63	81.82 20.4	38.42 17.93	445 .623	1.82 .67	.688 .213	760 365	385	110	20.8	17.6	25.6	118	7.2	4.5	88.4	3	3.15	1.04	4.67	
Average		1223	4.31	3.54	6.01	.232	.172	19.17	35.81	436	1.81	.592	725	423	106	2314	18.5	31.5	121.7	6.6	4.8	87.2	3.21	3.46	1.01	5.15
																60.4										

No. 16.	Name, Mr. W. Fr.	Weight, Jan. 8.....56.600 k.
		" " 12.....57.800 k.
		Gain.....1.200 k.

[illegible]

No. 17.	Name, Mr. CH. N.	{	Weight, Jan. 15.....	70.600 k.
			" " 21.....	"
			Loss.....	0

1903. 24 hours ending	Sp. gr.	Acidity.										Ratios.					Per cent of total N ₂ .						
		P ₂ O ₅ , mg. in 50 cc.		SO ₃ , mg. in 50 cc.		Cl ₂ , mg. in 10 cc.		Bithereal SO ₃ , mg. in 50 cc.		Neutral SO ₃ , mg. in 50 cc.		N ₂ , mg. in 5 cc.		Urea, gms.		NH ₃ , cc. N		Kreatinin, gms.		Uric acid, gms.			
		Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%		
January	cc. in 24°	Total		Total		Total		Total		Total		N. Total	N. %	Total		Total		Total		Total		Total	
15	87 685	198 2.73	298.8 2.83	19.5 3.50	7.4 3.50	108 2.80	26.82 12.43	330 5.45	1.086 4.41	188 1.056	40	571 186	19.7 15	24.1 30.5	95.5 119.5	3.5 7.4	85.6 80.4	8.8	2.8 2.6	3.88 .57	7.4 7		
17	81.5 675	168 2.27	141 1.90	57.5 3.87	21.6 292	111 12.73	.....	.....	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	84 755	160 2.42	77.4 2.68	76.97 5.63	16.4 26.8	24.28 11.33	347 4.96	99 3.86	366 1.32	145 1.15	65	529 145	20.3 14.5	42.6 38.4	90.3 115	9.6 14.5	85.8 80.5	8.7 8.7	2.7 1	6.8 1			
19	86 775	170 2.42	179.0 2.79	76.68 5.64	18.2 28.2	23.74 11.83	456 6.38	1076 3.89	444 1.48	566 109	90	566 109	20.2 14.5	43.0 38.4	94.3 115	4.8 14.5	80.5 80.5	4.6 4.6	2.8 1.1	5.5 1.1			
21	26 905	182.5 2.76	171 3.06	81.65 7.89	20.3 306	86.8 15.61	.....	.....	.....	.....	40	.....	19.8 19	47.4	89.0	11.8	80.6 80.8	..... .....	2.8 .....	.....	.....
Average {	760	2.56	2.66	5.66	3.90	1.90	13.96	11.90	1.05	3.90	51	402	18.4	37.5	97.7	10.8	56.8	4.4	2.8	.8	6.7		
									397	3.90							89.7						

No. 18. Name, Mx. W. — Weight about 48. k.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ mg. in 50 cc.	SO ₃ mg. in 50 cc.	Cl ₂ mg. in 10 cc.	Etheral SO ₃ mg. in 50 cc.	Neutral SO ₃ mg. in 50 cc.	N ₂ mg. in 5 cc.	Urea, gms.	NH ₄ co. N 10	Kreatinin, gms.	Uric acid, gm.	Acidity.		Indican.	Ratios.					Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
												Mineral.	Organic.		100 N ₂ :		100 SO ₃ :			Urea.	NH ₃ .	Kreatinin.	Uric acid.	Res.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
															P ₂ O ₅ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
July	cc. in 24°	Total	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	Titrated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

No. 19. Name, Mr. T.

1902. 24° ending.	Sp. gr.	P ₂ O ₅ mg. in 50	SO ₃ mg. in 50	Cl ₃ mg. in 50	N ₃ mg. in 5	Urea, gms.	N NH ₃ cc. 10	Acidity Titrated	Ratios.			Per cent of total N ₃
									100 N ₃ :		100 SO ₃ :	
									P ₂ O ₅	SO ₃	P ₂ O ₅	Urea. NH ₃
June	cc. in 24°	Total	Total	Total	Total		N. Total					Sum
17	17 1470	167 4.91	108 3.17	....	51.1 15.02	....	.452 .633	617	32.7	21.1	154.7	6.2
18	20 1080	150 3.24	125.5 2.71	....	64 13.84	....	.471 .658	540	23.4	19.6	119.6	4.7
Aug. 13	22 1300	150 3.90	....	....	68 17.75	84.9	.502 .703	724	32	....	....	38 92 4
14	19 1450	125 3.62	....	....	58 16.88	88.8	.522 .731	687	21.6	....	....	80.2 965 4.3
15	18 1050	125 2.62	....	....	57.5 12.07	24.3	.480 .602	498	21.74	....	....	30 94 5
Average }	1370	3.64	2.94	....	15.11	....	475 .665	619	24.3	20.3	137.1	88.7 93.2 4.8

No. 20. Name, Mr. J.

1902. 24° ending	Sp. Gr.	P ₂ O ₅ mg. in 50 cc.	SO ₃ mg. in 50 cc.	Cl ₃ mg.	N ₃ mg. in 5 cc.	Acidity. Titrated.	Ratios.		
							100 N ₃ :		100 SO ₃ :
							P ₂ O ₅	SO ₃	P ₂ O ₅
June	cc. in 24°	Total	Total	Total	Total				
21	83 925	207.5 3.84	168.4 3.12	....	74.7 19.35	666	19.8	16.1	123.2
22	26.5 1180	125 2.93	112.5 2.68	....	66.5 15.83	666	18.5	16.8	109.2
Average }	30 1060	3.38	2.90	....	17.59	666	19.1	16.5	116.2

Although the diarrhoea during this experiment was just about the same as during the first period, the differences in the urines from these two feeding experiments are quite remarkable. The

daily 24-hour quantity of urine was more than twice as great during the second experiment as during the first, yet the amount of total nitrogen eliminated with the urine was a little less during the second experiment. The ammonia remained as during the first period extremely high, being nearly four times as great as the normal with reference to the total nitrogen. The nitrogen-phosphate ratio instead of being about the lowest observed in any patient, as during the first experiment, went to the other extreme in the second period, 29 as against 17. The nitrogen-chloride ratio also increased almost as much as the nitrogen-phosphate ratio, but this is not very unusual because we find frequently enough that the chloride excretion is considerably influenced by the volume of water eliminated (which is not the case with reference to the phosphate elimination).

A few other abnormalities must be noted in this patient: (1) The ethereal sulphates are fully twice as great as the normal as judged by the corresponding ratios, yet the indican is below the normal in the second period. (2) The "neutral" sulphur is but a trifle higher than the normal during the first period and is more than twice the normal during the second period. (3) The undetermined nitrogenous rest is enough above the normal to indicate the presence in it of some substance pathological either in kind or in amount. In a few of the urines a slight albumin reaction could be detected by means of trichloroacetic acid, but this was not present in all and the reaction moreover was so slight as to exclude the possibility that the increase in the undetermined nitrogen was due to it. (4) In connection with the increase in the undetermined nitrogen it is to be noticed that the mineral acidity is either extremely low or is a minus quantity, i. e., is replaced by a mineral alkalinity, thus indicating that any pathological nitrogenous substance which might be present can not very well have basic properties. (5) The uric acid is practically normal with reference to the nitrogen during the first period (table 9) and is doubled in the second (table 10).

On account of the remarkable continuous excretion of ammonia it was decided to give the patient a moderate quantity of alkali and to study the effects. The second period was therefore continued for four more days, during which time about thirteen grams of sodium bicarbonate were given. During the first of these

days some urine was lost and the results of the next three days only are recorded (table 11). The results are again highly interesting, but in so far as the effect of the alkali is concerned it will be seen that the ammonia output is scarcely if at all affected. During this (third) period it will be seen that the volume of urine excreted has again become very small and with it we find a corresponding diminution of the chlorides. The phosphates are, however, not similarly affected and the nitrogen-phosphate ratio remains just about as high as during the second period. The ethereal sulphates have become nearly normal but the indican is now more than twice that of the second period, thus showing again that these two factors do not, as is frequently stated, go hand in hand as indicators of the amount of putrefaction that takes place in the intestines. The "neutral" sulphur remains high but very varying. The uric acid and the undetermined nitrogen remain as during the second period.

Two months later this patient was again taken for a feeding experiment of eleven days. The diarrhoea still remained about the same as during the preceding three periods, and this fact is indicated by the amount of nitrogen eliminated through the urine. From the records of table 12 it will be seen that the patient had at this time perceptibly recovered from the turbulent state of metabolism which prevailed during the first three feeding experiments. The ethereal sulphates are still considerably above the normal and the ammonia is high but is less than half of what it was during the earlier experiments.

It will be noted that three ammonia determinations are not recorded in table 12 and that the average has not been calculated. This is due to the fact that some of the urines obtained in this experiment were slightly decomposed when they reached the laboratory notwithstanding all the precautions taken to prevent this from occurring. The urines obtained in connection with our feeding experiments are collected in bottles containing a chloroform solution of thymol, and the ammonia determinations are always made first. Notwithstanding these precautions urines have been found occasionally which show ammoniacal decomposition. Contrary to what is generally supposed, some urines are decomposed in the sense of being turbid, and giving a strong odor peculiar to decomposed urines, and yet do not show any decomposition of urea into ammonia. (In such urines ammoniacal decomposition is, however, almost sure to begin a day or two later even in the presence of both chloroform and thymol.) Decomposi-

tion, resulting in an increase of the ammonia, is indicated by a lessened acidity as well as by an increase of the ammonia, and the presence of such ammoniacal putrefaction can always be demonstrated by making a second ammonia determination the following day. If any ammoniacal decomposition of the urine has begun, shaking or adding more preservative will not stop it and there will always be more or less of an increase of the ammonia shown the following day. Throughout these experiments the above mentioned precautions have been observed and the ammonia determinations of urines showing ammoniacal decomposition are either not recorded or are excluded in the calculation of the averages. In such cases the acidity determinations have also been left unrecorded.

The extreme variations noted in the preceding case of general paralysis, variations extending to almost every single urinary constituent included in the determinations, suggested the possibility that such seemingly capricious abnormalities may be characteristic of this fatal disease in one stage or another. The records of the other cases of general paralysis included in these studies are given in tables 13-20. They indicate that similar peculiarities are indeed to be found, at least to a much greater extent than is the case in normal persons or in the other patients.

H. H. V. (table No. 13).

"Age 42. Physical condition fair. Diagnosis: general paralysis. Physical signs: Argyll-Robertson pupil, tremor of lips and tongue, unsteady gait, increased knee-jerks. Mentally disoriented as to time and place, marked speech defect. All this has taken place in about six months."—P.

The most noticeable result in table 13 is perhaps the total nitrogen. Instead of being far below the normal, as in tables 9 to 12, it is here above the normal, is in fact greater than the laboratory diet could give normally since it is rather more than all the nitrogen contained in the food. Turning to the relative figures it will be seen (1) that the nitrogen phosphate ratio is lower than that of any one of the normal persons, though not nearly as low as the ratio given by H. C. C. in table 9. (2) The nitrogen-sulphate ratio is also somewhat lower than the lowest found among the normal persons, yet this could not be considered enough to be important were it not for the tendency shown by the other cases of general paralysis to have a low, even extremely low, nitrogen-sulphate ratio. (3) The ethereal sulphates in relation to the ordinary sulphates are almost as high as in H. C. C.

case (table 15) gives a ratio of 17.8. Five other cases of general paralysis are included in the records (tables 16-20) and a detailed study of these also will show a pronounced tendency to give other nitrogen-sulphate ratios than the normal. In table 17, for example, the average ratio is to be sure 19, but in this case for one day the astoundingly low ratio of 15 is recorded.

Table 21 gives together the nitrogen-sulphate ratios obtained from all the patients and normal persons thus far investigated.

The above discussion of the nitrogen-sulphate ratios may seem like giving undue prominence to a rather unimportant fact. The purpose of these investigations has been only to find if possible any peculiarity that may exist without regard to how much or how little importance may be properly attached to the same. But it is by no means impossible that the correct interpretation of the changed nitrogen-sulphate ratio in general paralysis will be found in the existence of a quite profound metabolism disorder involving an excessive destruction of body protein containing a smaller percentage of sulphur than that of the diet. Simultaneous collection and analysis of the feces would have settled this point, but as has already been mentioned it was found necessary to leave this work undone. In the continuation of the work the analysis of the feces will be included. A special experiment with a normal person undertaken for a different purpose but well adapted to throw light on this question may be cited here. Dr. A. of the hospital staff was subjected to a feeding experiment lasting nine days during which time he consumed only one half the quantity of liquid diet given to the men patients, the purpose being to see whether he could keep his body weight on such insufficient nourishment (table 22). The instructive feature of this experiment is the fact that with only 9 grams of nitrogen in the food he eliminated 10.6 grams of nitrogen in urine, thus proving conclusively that body protein was destroyed, and accompanying this loss of protein we find the nitrogen-sulphate ratios much below the normal values of the laboratory diet—just as in the general paralysis patients.

W. H. N. F. (table No. 16).

"Age 35. Married. Bank clerk. Physical condition: fairly well nourished. Argyll-Robertson pupils. Speech defect, slight tremor of tongue and hands. Active knee-jerks. Diagnosis: general paralysis. Duration

Weight Jan. 31.....54.500 k.
 " Feb. 6.....53.750 k.
 No. 22. Dr. A. { Loss.....750 g.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ , mgr. in 50 cc.	SO ₂ , mgr. in 50 cc.	Cl ₂ , mgr. in 10 cc.	Etheral SO ₂ mgr. in 50 cc.	Neutral SO ₂ mgr. in 50 cc.	N ₂ , mgr. in 5 cc.	Urea, gms.	NH ₃ , co. N 10	Kreatinin, gms.	Uric acid, gms.	Acidity.		Ratios.					Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Jan.	cc. in 24°	Total	Total	Total	Total	Total	Total	N.	Total	N.	Total	Titrated Total	Indian.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

about 18 months, commencing with change of character and soon after a convulsion. Later many convulsions and a feeling of general satisfaction with everything."—P.

In this table it is to be noted that the nitrogen-sulphate ratio is below the normal; further, the enormous output of nitrogen (24.5 g.) on January 11, associated with a most remarkable progressive increase in the kreatinin elimination, suggests unmistakably the existence of a very unstable if not pathological state of metabolism.

C. P. N (table No. 17).

"Age 44. Married. Manufacturing chemist. Physical condition: well nourished. Diagnosis: general paralysis. Patient has been in this hospital for 7 years, during which time he has gradually become completely demented and shows all the characteristic physical signs."—P.

The most striking peculiarity of this case is the abnormally low nitrogen-phosphate ratio, and on one day (January 17) a nitrogen-sulphate ratio of 16 as against the normal 19.7. The total nitrogen elimination is below the normal and the ethereal sulphates are higher than the normal. The relative amounts of the four chief nitrogenous constituents are noticeably different from the normal. The sum of urea + ammonia.—nitrogen is too low, the undetermined nitrogen too high. The uric acid is entirely too variable and the kreatinin is decidedly below the value which I have reason to consider normal for a person weighing over seventy kilos.

W. H. W. (table No. 18).

"Age 53. Possible syphilis; admits he had a sore on penis when a young man but denies any secondary symptoms. No evidence of old syphilis. Physically: Argyll-Robertson pupil, active knee-jerks. Occasional questionable signs of a speech defect. Undernourished. Sallow complexion. Mental picture: agitated melancholia with many somatic ideas (petrified, throat parted, etc.), which are not more absurd than those of other melancholias. No primary memory defect. In course of time quiets down; physical signs remain the same. Memory good. Rather shallow appreciation of condition, without clear insight. Superficially fairly natural impression. After three months at home it is said that his business judgment has not suffered. Diagnosis: probably general paralysis with remission. At time of admission condition had lasted for about a year."—H.

W. H. W. has been placed among the general paralysis cases although the diagnosis is somewhat doubtful. The analytical results contain practically nothing indicating any abnormal metabolism.

F. A. S. (table No. 19).

"Age 41. Physical condition good. Diagnosis: general paralysis, with marked dementia; marked dulness and memory defect, disorientation, great inactivity, great irritability, delusions that he is only three feet high, weighs three pounds, is shrivelled up, etc. This is the condition from June 15 to 18, and it is essentially the same during the period from August 9 to 17, but during the latter period he alternated from day to day, being one day more unsteady on his feet, more irritable, the next day a little steadier and more easily handled. Physically: speech defect. Some defect of pupil reaction. Patellar reflexes normal."—H.

D. E. J. (table No. 20).

"Age 43. Physical condition: lost 20 lbs. before the experiment and continued to lose after it. Diagnosis: general paralysis of long standing, with profound dementia and confusion, some delusions and at times irritability. Active condition."—H.

Tables 19 and 20 have been included in this list, although the analyses are so incomplete as to throw very little light on the question of abnormal metabolism. Both these cases were studied chiefly with reference to the phosphate metabolism.

From the analytical findings recorded in tables 1-22 it would seem safe to conclude that general paralysis patients kept on a uniform diet are apt to exhibit much greater fluctuations in the urinary constituents than those shown by normal persons under similar conditions.

Special mention must now be made of a rather unique case of general paralysis, in the study of which no less than one hundred and sixty 24-hour quantities of urine were collected and analyzed between October, 1901, and January, 1903.

TABLE 22.

Date.	Time.	Vol. cc.	Sp.gr. 1.0—.	N ₂ Gm.	P ₂ O ₅ Gm.	SO ₂ Gm.	100 N ₂ :		100 SO ₂ : P ₂ O ₅ .
							P ₂ O ₅ .	SO ₂ .	
Oct. 21	6.30 a. m.—2.00 p. m.	825	27.5	4.65	0.72	1.19	15.5	25.5	60.5
" 21	2.00 p. m.—9.00 p. m.	180	27.0	2.45	0.42	0.65	17.1	26.5	64.6
" 21	9.00 p. m.—6.30 a. m.	625	24.0	8.87	1.26	1.70	15.0	20.3	74.1
	Totals.....	1110	....	15.47	2.40	3.54	15.5	23.9	65.0
Oct. 22	6.30 a. m.—2.00 p. m.	825	28.0	3.10	0.56	0.43	18.1	18.5	125.2
" 22	2.00 p. m.—9.00 p. m.	355	31.0	5.00	1.26	1.27	25.2	22.4	90.2
" 22	9.00 p. m.—6.30 a. m.	305	28.0	5.80	1.09	1.21	20.6	20.6	90.0
	Totals.....	965	....	13.40	2.91	2.90	21.7	21.7	105.0
Oct. 23	6.30 a. m.—2.00 p. m.	225	26.0	3.62	0.49	0.60	13.9	17.0	81.7
" 23	2.00 p. m.—9.00 p. m.	225	32.0	4.43	0.59	1.00	13.3	22.6	59.0
" 23	9.00 p. m.—6.30 a. m.	720	20.0	7.92	1.18	1.21	14.9	16.5	97.6
	Totals.....	1170	....	15.87	2.26	2.81	14.2	17.7	80.4
Oct. 24	6.30 a. m.—2.00 p. m.	600	13.0	2.97	0.44	0.29	14.8	9.8	151.6
" 24	2.00 p. m.—9.00 p. m.	185	25.0	1.87	0.27	0.20	19.7	14.6	135.0
" 24	9.00 p. m.—6.30 a. m.	700	14.0	5.16	1.07	0.73	20.7	14.1	146.0
	Totals.....	1485	....	9.49	1.78	1.22	18.7	12.9	146.0
Oct. 25	6.30 a. m.—2.00 p. m.	310	20.0	3.31	0.51	0.61	15.4	18.4	88.6
" 25	2.00 p. m.—9.00 p. m.	825	25.0	4.10	0.52	0.85	12.7	20.7	61.2
" 25	9.00 p. m.—6.30 a. m.	800	19.0	7.20	1.08	1.09	15.0	15.1	100.0
	Totals.....	1435	....	14.61	2.11	2.55	14.4	17.3	83.0
Oct. 26	6.30 a. m.—2.00 p. m.	310	23.0	3.18	0.48	0.51	15.1	16.0	94.1
" 26	2.00 p. m.—9.00 p. m.	225	29.0	2.96	0.63	0.53	21.5	19.6	108.6
" 26	9.00 p. m.—6.30 a. m.	790	08.5	4.03	0.79	0.30	19.6	7.4	256.3
	Totals.....	1325	....	10.17	1.90	1.39	18.6	13.7	137.0
Oct. 27	6.30 a. m.—2.00 p. m.	220	22.0	1.83	0.27	0.30	14.7	16.4	90.7
" 27	2.00 p. m.—9.00 p. m.	220	22.0	7.73	0.98	1.37	12.7	17.7	71.5
" 27	9.00 p. m.—6.30 a. m.	920							

TABLE 23—Continued.

Date.	Time.	Vol. cc.	Sp. gr. 1.0—.	N ₂ . Gm.	P ₂ O ₅ . Gm.	SO ₃ . Gm.	100 N ₂ :		100 SO ₃ : P ₂ O ₅ .
							P ₂ O ₅ .	SO ₃ .	
Oct. 28	6.30 a. m.—2.00 p. m.	625	17.0	3.94	0.68	0.51	17.2	12.9	138.8
" 28	2.00 p. m.—9.00 p. m.	195	29.0	3.57	0.76	0.74	21.3	20.7	102.7
" 28	9.00 p. m.—6.30 a. m.	425	27.5	5.33	1.33	1.30	25.0	24.4	102.8
	Totals.....	1245	....	12.84	2.77	2.55	21.5	18.3	108.5
Oct. 29	9.30 a. m.—2.00 p. m.	375	25.0	4.22	0.59	0.83	14.0	19.7	71.1
" 29	2.00 p. m.—9.00 p. m.	340	27.0	5.16	0.57	1.12	11.0	21.7	50.9
" 29	9.00 p. m.—6.30 a. m.	300	23.0	8.77	1.13	1.33	12.9	15.7	82.0
	Totals.....	1515	....	18.15	2.29	3.33	12.6	18.3	69.0
Oct. 30	6.30 a. m.—2.00 p. m.	450	23.0	4.23	0.67	0.68	15.8	16.0	98.5
" 30	2.00 p. m.—9.00 p. m.	340	26.0	4.40	0.93	1.12	22.3	25.5	87.5
" 30	9.00 p. m.—6.30 a. m.	595	16.0	6.19	0.85	1.03	18.9	17.4	80.0
	Totals.....	1385	....	14.82	2.51	2.83	17.0	19.2	90.0
Oct. 31	6.30 a. m.—2.00 p. m.	175	29.0	3.27	0.30	0.61	9.2	18.6	49.2
" 31	2.00 p. m.—9.00 p. m.	240	31.0	5.33	0.54	1.15	10.0	21.4	47.0
" 31	9.00 p. m.—6.30 a. m.	390	14.0	7.48	0.87	0.99	11.6	13.2	37.8
	Totals.....	1805	....	16.18	1.71	2.75	10.6	17.1	62.5
Nov. 1	6.30 a. m.—2.00 p. m.	420	20.0	3.57	0.39	0.54	10.9	15.1	72.2
" 1	2.00 p. m.—9.00 p. m.	400	23.0	4.53	1.03	1.05	22.7	23.2	96.1
" 1	9.00 p. m.—6.30 a. m.	260	27.0	4.07	0.72	0.72	17.7	17.7	100.0
	Totals.....	1070	....	10.98	2.14	2.31	20.0	21.2	92.6
Nov. 2	6.30 a. m.—2.00 p. m.	385	24.0	3.92	0.40	0.63	10.3	16.1	63.3
" 2	2.00 p. m.—9.00 p. m.	345	16.0	4.60	0.52	0.56	11.3	12.2	93.0
" 2	9.00 p. m.—6.30 a. m.	790	12.0	4.79	0.82	0.74	17.1	15.5	110.3
	Totals.....	1470	....	13.31	1.74	1.93	13.1 ¹	14.5	90.0 ¹

¹ Some error has evidently crept into the analyses of this day, probably into the sulphate analyses, since the N₂: SO₃ ratio is much lower and the SO₃: P₂O₅ ratio much higher than on any previous corresponding day. This error was not discovered until it was too late to repeat the analyses.

TABLE 24.

Date.	Time.	Volume.		Sp. Gr. 10°.		N ₂ Gm.		P ₂ O ₅ Gm.		SO ₂ Gm.		100 N ₂ : P ₂ O ₅		100 N ₂ : SO ₂		100 SO ₂ : P ₂ O ₅	
		Patient.	Control.	Patient.	Control.	Patient.	Control.	Patient.	Control.	Patient.	Control.	Patient.	Control.	Patient.	Control.	Patient.	Control.
Nov. 3	6.30 a. m.—2.00 p. m.	615	266	18.0	28.0	6.87	3.86	1.60	0.64	1.21	0.64	21.8	16.6	17.6	21.8	124.0	76.2
Nov. 3	2.00 p. m.—9.00 p. m.	465	316	28.5	30.5	6.68	6.56	1.63	1.62	1.29	1.84	32.1	23.2	29.1	30.5	141.8	113.4
Nov. 3	9.00 p. m.—6.30 a. m.	590	320	20.0	31.5	6.00	6.79	0.90	1.50	1.06	1.16	21.6	25.8	26.2	20.0	81.9	130.4
	Totals.....	1670	800	...	...	16.46	16.20	4.19	3.66	3.56	3.38	266.6	292.6	22.2	20.5	118.0	110.0
Nov. 4	6.30 a. m.—2.00 p. m.	490	160	23.0	22.0	6.13	2.41	0.40	0.62	1.00	0.48	16.6	18.5	19.5	17.1	80.0	104.3
Nov. 4	2.00 p. m.—9.00 p. m.	375	275	25.0	25.0	6.07	6.28	0.67	1.11	1.22	0.90	11.0	21.0	20.1	16.8	66.0	124.7
Nov. 4	9.00 p. m.—6.30 a. m.	950	430	17.0	34.5	9.04	9.37	1.23	2.04	1.00	1.06	13.5	21.7	11.0	17.7	123.0	127.0
	Totals.....	1815	875	...	...	20.26	17.46	2.70	3.67	3.22	3.03	13.3	21.0	15.9	17.8	83.9	121.1
Nov. 5	6.30 a. m.—2.00 p. m.	475	395	22.5	22.5	4.01	5.02	0.79	1.16	0.69	0.82	19.4	20.4	14.7	14.6	132.2	140.2
Nov. 5	2.00 p. m.—9.00 p. m.	440	350	23.0	23.0	6.49	6.30	1.61	1.5	1.16	1.38	23.6	20.0	19.5	22.0	125.0	90.6
Nov. 5	9.00 p. m.—6.30 a. m.	570	240	16.0	36.0	6.32	6.17	1.12	1.86	0.82	1.06	21.0	22.0	17.8	16.7	121.7	132.0
	Totals.....	1525	906	...	...	15.22	18.00	3.41	3.76	2.66	3.23	22.4	20.8	17.4	17.8	128.9	116.0
Nov. 6	6.30 a. m.—2.00 p. m.	645	275	22.0	24.0	6.90	4.98	1.06	0.82	1.12	0.80	16.2	16.6	16.8	17.9	93.7	92.1
Nov. 6	2.00 p. m.—9.00 p. m.	440	375	23.0	27.0	4.87	6.13	0.62	0.98	0.96	1.01	14.2	18.1	19.7	20.0	73.1	92.1
Nov. 6	9.00 p. m.—6.30 a. m.	860	375	20.0	29.0	7.26	6.64	1.10	1.40	1.16	1.19	16.1	21.4	16.0	18.2	94.8	117.7
	Totals.....	1965	1025	...	...	18.62	16.66	2.77	3.16	3.14	3.00	15.0	18.9	17.0	18.6	88.3	102.0
Nov. 7	6.30 a. m.—2.00 p. m.	460	310	23.0	31.0	4.54	4.86	0.84	0.80	0.73	0.99	21.6	18.8	16.1	20.4	134.3	90.0
Nov. 7	2.00 p. m.—9.00 p. m.	325	700	13.0	13.0	4.14	5.59	1.25	1.25	0.45	1.00	18.0	15.1	20.5	18.0	147.0	101.0
Nov. 7	9.00 p. m.—6.30 a. m.	525	340	19.0	28.0	6.91	6.83	1.81	1.28	1.10	1.34	23.2	20.2	15.9	21.1	164.5	98.5
	Totals.....	1300	1350	...	...	15.59	16.78	4.04	3.18	2.64	3.33	25.9	19.8	17.2	19.9	151.0	95.5
Nov. 8	6.30 a. m.—2.00 p. m.	300	240	25.0	26.0	4.45	4.86	0.66	0.83	0.45	0.91	12.6	17.1	19.1	18.8	65.4	91.2
Nov. 8	2.00 p. m.—9.00 p. m.	365	375	23.5	23.0	6.85	7.12	1.18	1.33	1.16	1.37	16.6	18.6	17.0	22.0	101.0	96.0
Nov. 8	9.00 p. m.—6.30 a. m.	580	560	21.0	26.0	7.56	9.79	1.17	2.16	1.13	1.48	21.8	21.8	16.0	16.2	131.6	144.0
	Totals.....	1275	1245	...	...	18.86	21.76	2.91	4.30	3.14	3.96	15.4	19.9	16.7	18.2	92.7	109.0

TABLE 25.

Date.	Volume. cc.	Sp.Gr. 1.0—	N ₂ Gm.	P ₂ O ₅ Gm.	SO ₃ Gm.	100 N ₂ :		100 SO ₃ :	N ₂ in faeces Gm.
						P ₂ O ₅ .	SO ₃ .	P ₂ O ₅ .	
Nov. 13	1265	22.5	16.1	8.71	8.28	23.0	20.8	114.0	
" 14	980	29.0	17.0	2.24	8.80	19.0	20.0	95.6	
" 15	960	32.0	17.6	8.31	8.87	21.6	19.1	113.0	3.21
" 16	1080	29.5	18.2	8.20	8.84	17.5	18.5	95.2	
" 17	925	32.5	17.0	8.90	8.84	22.9	19.6	116.7	0.55
" 18	900	33.0	17.5	8.34	8.28	19.1	18.4	103.0	4.88
" 19	850	34.0	16.9	8.40	8.25	23.0	19.2	120.0	1.80
" 20	820	31.5	16.8	8.02	8.32	18.0	20.0	90.0	
" 21	1065	30.0	17.8	4.84	8.15	25.1	18.3	138.0	2.40
" 22	990	27.5	16.6	8.09	8.21	18.6	19.8	96.0	
" 23	985	29.0	16.1	8.54	8.18	22.0	19.7	111.0	0.98
" 24	965	25.0	17.0	8.14	8.01	18.5	17.7	104.0	2.16
" 25	915	30.0	15.8	8.60	8.12	22.7	19.7	115.0	1.18

A brief report of this case was published in the April number of the *American Journal of Physiology*, 1902 (Vol. VII, p. 135). From this paper we quote the following:

"Dr. Hoch gives us the following summary of his description of the case:

"The patient's condition alternated with absolute regularity from day to day, being one day little removed from the normal, while quite disturbed on the other. These two states presented the following pictures: On the disturbed days the patient was often restless, walking aimlessly about with short steps, talking in the manner described below, or he handled things about him in an aimless way or took off his clothes, etc. His talk indicated that his ability to guide voluntarily his train of thought was much diminished. The different thoughts he uttered were but superficially connected, or his talk was constantly deflected by external happenings (great distractibility). Sometimes when less voluble he repeated the same question many times in a senseless manner or made remarks which were superficially suggested but which had no internal connection with what was spoken or what the circumstances demanded. Consequently when the abnormality was least marked, the main feature was a certain irrelevancy in the patient's remarks. The facial expression was almost always dull and immobile, the mood rather apathetic, but at times an irritability and occasionally a striking exhilaration were noted. He never lost his bearings, probably because the good days were constant correctives, but he had no clear appreciation of things or occurrences about him and on the good days he remembered poorly the sequence of events of the previous bad days. On the good days he often varied but little from the normal, but appeared somewhat dull without perfect appreciation of his condition and at times an irrelevant remark betrayed slight traits of the bad days."

TABLE 26. Name, Mr. F. C. P.

1932. 24 hours ending	Co. in 24°.	Sp. gr. 1.0—	N ₂		P ₂ O ₅		SO ₂		Ratios.		
			Mg. in cc.	Total gm.	Mg. in 50 cc.	Total gm.	Mg. in 50 cc.	Total gm.	100 N ₂ :		100 SO ₂ :
									P ₂ O ₅	SO ₂	P ₂ O ₅
May 25	940	24	79	14.87	152.5	2.87	157	2.89	19.8	19.5	99.1
" 26	970	30.5	88.9	16.27	210	4.07	182	3.14	25	19.3	123.6
" 27	800	29.5	45	15.37	197.5	3.16			20.5		
" 28	1220	26.5	65	15.85	158	3.34			24.2		
" 29	1040	21.5	71	14.85	180	3.33	148	3.06	22.4	20.8	105
" 30	1580	20.5	52	16.25	163	4.76	97	3.04	20.4	18.7	157
" 31	855		75	12.81	178	3.08	165	3.23	23.7	22	105
June 1	1240	24.5	66	16.77	160	4.09	122	3.12	24.4	18.6	121.5
" 2	775	25	92	14.25	205	3.17	190	2.95	22.2	20.7	107.8
Average.	1050			15.25		3.59		3.06	23.6	19.67	119.6
Average of "good" days	882			14.43		3.11		2.93	21.55	20.3	105
Average of "nervous" days.	1260			16.28		4.19		3.10	25.74	19.64	125

TABLE 27. Name, Mr. F. C. P.

June 22	1480	21	52	15.16	105	3.07	109	3.19	20.2	21	96
" 23	1760	16	40	14.24	105	3.49	79.5	2.80	24.4	19.6	124
" 25	1890	15	37	13.79	93	3.43	69	2.58	25.2	18.9	123
" 26	1220	23.5	68	15.47	142	3.46		3.21	22.3	21.4	108
" 27	1660	19	47.6	15.80	100	3.32	88.5	2.94	21	18.6	113
" 28	1475	18	50.4	15.98	115	3.41	105	3.10	21.4	19.4	110
" 30	1880	22	62	17.00	113	3.12	112	3.10	18.3	18.2	101
July 2	1215	21	70	17.01	150	3.64	138	3.35	21.4	19.8	101
" 3	1810	21	62.7	16.43	109	2.84	124	3.28	17.3	19.9	87
" 4	1850	15	45	16.52	88	3.25	79.5	2.94	21	18	111
" 8	1130	19	55	12.47	117	2.63	119	2.69	21.1	21.6	96
" 9	1075	26	33	17.91	155	3.33	161	3.45	18.7	19.3	95.6
" 10	870	29	65	8.70	162	2.08	129	1.73	23.3	20	117
" 11	1400	18	56	15.78	120	3.56	102	2.86	22.6	18.2	124
" 12	1700	16	46	15.71	102	3.45	86.4	3.04	22	19.3	113
" 13	860	22	73	12.50	192	3.38	160	2.75	27	22	123
" 14	1425	20	57	16.24	119	3.39	112	3.19	20.9	19.6	105
" 15	675	30.5	99	13.44	247	3.34	237	3.30	24.9	23.8	104
" 16	950	28	85	16.17	195	3.71	154	2.62	22.9	16.2	141
" 17	1840		42	11.33	98	2.63			23.2		
" 18	900		71.3	12.83	175	3.15			24.5		
" 19	700		79.8	11.17	179	2.51			22.4		
" 20	1000		72.4	14.48	157	3.15			21.7		
Average	1262			14.57		3.19		2.95	22.07	19.7	110.3
Average of "good" days	1260			14.83		3.19		2.92	21.44	19.5	109.2
Average of "nervous" days	1265			14.24		3.19		2.98	22.67	20	111.8

No. 29. Name, Ma. F. C. P.

1908. 24 hours ending	Sp. gr.	P ₂ O ₅ , mg. in 50 cc.	SO ₂ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, gms.	NH ₃ , cc. N 10	Kreatinin, gms.	Uric acid, gm.	Acidity.		Indican.	Ratios.				Per cent of total N ₂ .									
												Mineral.	Organic.		100 N ₂ :		100 SO ₂ :		Urea.	NH ₃ .	Kreatinin.	Uric acid.	Rest.					
															P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .						Etheral SO ₂ .	Neutral SO ₂ .			
January	cc. in 24°	Total	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	Titrated	Mineral.	Organic.					Sum									
9	16	90	87.5	43.5	28.8	476	45	28.8	476	...	496	544	...	...	25	20.2	19.6	48.6	108.3	...	87.12	4.38	...	...		
10	1700	3.06	2.97	7.38	13.22	.666	15.16	17.26	490	...	472	616	...	544	...	23.1	21	28.6	110	...	91.6	4.5	...	...		
10	890	3.42	3.11	4.23	27.25	.67	14.80	12.72	545	...	167	...	...	...	86	23.1	21	28.6	110	...	86	4.5	...	...		
11	19	135	106	39	23.53	.66	15.62	13.33	484	...	725	...	...	...	88	24.8	18.9	85.3	137	...	85.5	4.9	...	...		
11	1406	3.79	2.98	5.48	15.62	.763	15.60	13.46	513	...	668	...	...	...	18	24	20.8	86.2	115	...	86.82	4.08	...	...		
12	23	165	142.5	49.5	28.84	.636	15.60	13.46	513	...	...	...	...	...	83	24.8	20	84.2	121.4	...	86.9	4.6	...	...		
13	19	128	109.4	37.5	29.06	.717	15.60	13.56	532	...	...	...	...	...	88	21.1	20	81.7	106	...	87	4.5	...	...		
14	24	166	148	46.5	30.58	.582	16.60	14.27	476	...	672	...	...	...	88	23.9	20	89.1	119	...	88.8	4.1	...	...		
15	20	138	115.4	45	30.51	.666	16.13	14.24	522	...	...	...	...	...	50	23.2	18.7	29.5	124	...	89.2	4.4	...	...		
16	23	138	107.8	34	31.72	.522	16.61	14.80	504	...	678	...	...	...	100	22.2	20	25.8	110.6	...	88.49	4.17	...	...		
17	17	113	102	28.3	32.01	.504	16.92	14.94	496	...	564	...	...	...	50	24.2	20.6	29	118	...	87.06	4.4	...	...		
18	28	200	170.2	48	32.5	.496	15.42	13.50	680	...	617	...	...	...	50	22.5	18.8	38.6	119	...	88.6	4.2	...	...		
18	935	3.74	3.18	4.49	16.48	.690	14.87	13.07	502	...	...	...	...	...	60	23.5	20.6	34.3	128.7	...	87.87	4.5	...	...		
19	19	118	99.1	40.5	31.80	.582	16.48	14.61	481	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	1570	3.71	3.11	6.36	16.48	.70	14.87	13.07	481	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	22	168	136.4	45.3	36	.481	14.87	13.07	481	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	1126	3.96	3.07	5.10	14.87	.673	14.87	13.07	481	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
															45	23.26	20.2	34.2	115.2	...	...	...	...	...	...	...	...	...
															703	...	...	...	...	...	...	...	...	...	...	...	...	...
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
															

This condition, which has now lasted uninterruptedly for several months, seemed to offer an unusual opportunity for trying to discover some alternation in the metabolism of the patient corresponding to the alternation in the mental symptoms. Any sufficiently characteristic alternation in the patient's metabolism was deemed important, because we can scarcely be said to have as yet the proof of the existence of any abnormal metabolism whatever which is characteristically associated with any of the mental diseases.

The existence of an unmistakable periodicity in the elimination of phosphoric acid through the kidneys corresponding to the periodicity in the mental condition of this patient is, we think, proved by the analyses and experiments recorded below.

Tables 23-25, taken from the same paper, contain the essential facts of our earlier experiments. Only the last table, No. 25, is obtained from a uniform diet, but table 24 is almost equally conclusive, because the control person (the nurse) consumed as nearly as possible the same kind and amount of food as the patient and the figures given by the control are, it will be seen, far more uniform than those of the patient.

At that time and in fact throughout the period of our subsequent experiments the case in question was held to be one of manic-depressive insanity, but at the post mortem examination made at the State Hospital in Taunton in January, 1904, by Dr. Hoch and Dr. Harry Miller, it was found to be a case of general paralysis.¹

Many of the later experiments made on this patient were undertaken for the purpose of trying to determine in how far his condition was dependent on his food. They involved therefore the use of different diets, and as the results obtained were not very convincing they will not be recorded. Some of the later uniform laboratory diet experiments will, however, be given here. The persistent and pronounced daily variations which characterized this patient during our earlier experiments had considerably

¹ In view of the great amount of analytical work expended on this case and the increasing uncertainty in regard to the diagnosis, much credit is due Dr. Miller for his interest and cooperation without which the decisive autopsy would never have been obtained.

diminished before we had come to adopt a standard laboratory diet, and although we took advantage of the occasional returns of this peculiar condition the later records are less striking. Table 26 represents such a period of pronounced daily alternation in the condition of the patient, and during this time it will be seen that on the "nervous" days (the even dates) the phosphates in the urine average 4.19 g. as against 3.11 g. on the good days, and the average nitrogen-phosphate ratios are respectively 25.7 and 21.5.

At the end of this period the alternating condition of the patient began to disappear and did not return to a sufficient degree to affect noticeably the phosphate metabolism. In table No. 29, for example, there is no longer to be found any regular variation in the phosphate elimination.

In the paper referred to above, p. 150, an attempt was made to explain the peculiar variations in the phosphate elimination of this patient by assuming a condition analogous to diabetes, but being periodical and confined to the phosphates instead of to the carbohydrates. This hypothesis, taken together with the mistaken diagnosis of manic depressive insanity, influenced greatly the subsequent experiments, and for a time it was thought that the phosphate metabolism in manic depressive insanity is characteristically different from the normal. Further experiments failed, however, to verify this view, and now with a definite identification of the case in question as one of general paralysis it would seem more fruitful to regard the peculiar variation in the phosphate elimination recorded in tables 23-27 as a most striking illustration of the remarkable tendency on the part of general paralysis to exhibit greater than normal fluctuations in the urinary constituents. It is much to be regretted that we were at no time able to make a complete analytical record of this case. I fully believe that we should have obtained some very instructive results if this could have been done when the clinical symptoms were sharply alternating.

The fluctuations here recorded in connection with general paralysis explain why the earlier metabolism literature of this disease is so full of contradictory results. They also indicate that the disease may indeed be essentially a metabolism disorder, but to get unmistakable light on this point will require a great deal of careful metabolism work.

On the pages that follow will now be given in tabular form the analytical data obtained from similar feeding experiments with other patients. Every attempt to find in these tables any indication of a characteristic metabolism corresponding to the given clinical classifications has failed. I shall therefore not attempt to discuss the results in detail. The chief present value attached to the figures from a clinical point of view is that they show how unreliable must be the statements made in literature from time to time about any abnormal metabolism characteristic of any of these common forms of mental diseases. I could easily point out a dozen papers on the metabolism of the insane published during the past five years, the main contention of which can be shown to be erroneous by the figures recorded in these tables. To do so would, however, only be to engage in useless controversies.

On the other hand, by comparing the figures given in tables 30-47, i. e., those most completely covered by the analytical work, with the standard values of table No. 8, it would seem as though *individual* peculiarities (abnormalities?) are of very frequent occurrence, the cases of more or less abnormal metabolism representing fully one half of the cases recorded.

J. Y. W. (table No. 30).

"Age 51. According to physician's account the patient has had syphilis. About a year before admission somewhat depressed after business troubles but soon works again. A few months before admission becomes dull, apathetic, again depressed and restless. No headaches. Dulness shows daily variations in intensity (not quite consistent). He is admitted in rather poor physical condition; weak, irregular pulse. Dull, slow in motion and speech. This varies somewhat from day to day, but even on freer days poor memory, great difficulty in thinking and in retaining impressions, poor grasp on surroundings. With this unequal knee-jerks at first. Later markedly unequal facial innervation. Temporary insufficient reaction of pupils. Difficulty in starting stream in urinating. Hard-writing with omission of letters and mistakes. No speech defect. Optic disk normal. Both physical and mental symptoms clear up in course of 2 months except the inequality of knee-jerks. Mentally, he became more alert but developed a certain querulousness. Six months after discharge he is said to be at a standstill—did not get back to work. Diagnosis questionable. It may be general paralysis."—H.

Metabolism not normal. Total nitrogen and kreatinin elimination is below the normal and too variable, and the "neutral" sulphur is greater than normal.

C. C. W. (table No. 31).

"Age 20. Physical condition good. Diagnosis: Dementia præcox. Nearly two years' duration, characterized by delusions such as that his strength is running off the end of his penis, that he must hold on to it to save it, or that it is leaving his heart and he wears a magazine over it. Talk is somewhat scattered. Normal motor activity. Later typical, grave, dementia præcox deterioration."—H.

Metabolism almost normal. Nitrogen-sulphate ratio outside the normal limits.

A. W. (table No. 32).

"Age 58. Physical condition good. Diagnosis: unquestionable, manic-depressive insanity. During the experiment she was in a mixed state of medium intensity. On the emotional side there was a tendency to exhilaration. Motor activity about normal. On the ideational side marked slowness of thinking and some evidence of flight of ideas. Poor grasp on surroundings. Throughout the period there was a tendency to variation, but not a daily alteration."—H.

Metabolism normal.

A. R. (table No. 33).

"Age 56. At menopause, depression with at first restlessness, apprehensiveness, poor grasp on surroundings. After a few days development of somatic ideas which henceforth dominate the clinical picture. She is quiet, says little, narrowing of mental horizon."—H.

Metabolism almost normal, ethereal sulphates very high, uric acid abnormally low, indican high.

G. W. P. (table No. 34).

"Age 52. Physical condition excellent. Diagnosis: manic-depressive insanity. Characterized by depression, retardation, but also some restlessness, and a few somatic ideas. Third attack."—P.

Metabolism practically normal. Ethereal sulphates high, indican very high.

W. H. (table No. 35).

"Age 26. Physical condition good. No disorders of vegetative organs. Diagnosis: dementia præcox deterioration (with scattered talk) of five years' standing."—H.

Metabolism almost normal. Ethereal sulphates above, uric acid below, the normal.

E. F. (tables 36, 37).

"Age 41. Physical condition normal, well nourished. Diagnosis: manic-depressive insanity, excited form. Mild excitement showing itself in talkativeness, over-activity, sometimes anger, usually exhilaration, slight flight of ideas, but perfectly good grasp on surroundings. Five days previous to experiment she had been in a state of marked motor retardation. Condition stable through experiment."—H.

(Second period.) "This period resembled very much the first and is about the same in intensity."—H.

Metabolism perfectly normal.

P. E. (table No. 38).

"Age 17. Gradually developing dementia præcox. During experiments dull, paralogia, mannerisms, occasional catatonic positions. Ideas of influence, impulsive acts."—H.

Metabolism nearly normal. Nitrogen-sulphate ratio rather low, neutral sulphur high.

E. C. (table No. 39).

"Age 63. Physical condition: rather undernourished; no disorder of vegetative organs. Diagnosis: manic-depressive insanity, with moderate retardation, slowness in thinking, dearth of ideas. Condition remarkably stable and not essentially different in the two periods."—H.

Metabolism normal but ethereal sulphates high.

E. N. M. (table No. 40).

"Age 47. Widow. Rather large, fleshy woman with chronic nephritis. Headaches for at least a year. Then several slight convulsions, finally a marked one, after which the patient had a delirium with confusion, activity, hallucinations and delusions. She cleared in about 3 days with perfect insight, normal mental condition, which is present during the experiment."—P.

Metabolism very abnormal. The kreatinin, the uric acid, and the ammonia elimination is less than half the normal and the acidities are altogether too variable. This is very significant in view of the fact that the patient died of "uræmia" shortly afterwards. The undetermined nitrogenous rest is too high, the nitrogen-phosphate ratio is too low. The nitrogen-sulphate ratios show a progressive diminution that is certainly interesting. From the absolute values it looks as though the absorption of a rather large amount of nitrogenous food forced the kidneys to eliminate more and more total nitrogen and phosphates while the utmost

excretory capacity of the kidneys either for sulphates or for ammonia had been reached, resulting in a retention of ammonium sulphate.

G. S. (table No. 41).

"Age 33. Physical condition good. No disorder of vegetative organs. Diagnosis: manic-depressive insanity, depressed form, with lack of initiative, decided difficulty in thinking, some slowness in motion and diminished motor activity. No emotional depression except episodically, and also episodically slight traces of exhilaration."—H.

Metabolism not normal. The elimination of total nitrogen and of kreatinin is too variable, the nitrogen-sulphate ratios are too low, and the relative amounts of ethereal sulphates and of neutral sulphur are too high.

P. S. (tables 42-43).

"Age 18. Physical condition: poorly nourished. Diagnosis manic-depressive insanity, depressed form. Retardation of marked intensity, some of it probably due not to actual retardation but to intensification by hypochondriacal delusions and complaint that whenever he moves he has pains. Condition throughout the experiments stable."—H.

Metabolism not very abnormal but very unsettled. This is to be seen first of all in connection with the ammonia elimination, particularly in table 43; also in connection with the volume of urine and of total nitrogen eliminated, and further in ethereal sulphate and neutral sulphur ratios. Compare also the lack of uniformity in the kreatinin values of table 43 as against the corresponding figures of table 42.

N. G. (table No. 44).

"Age 53. Good physical condition, no disorder of vegetative organs. Diagnosis: dementia, with speech confusion, bizarre behavior, after dementia præcox 23 years previously. Condition stable."—H.

Metabolism normal.

J. S. (table No. 45).

"Age 64. Physical condition: moderate nutrition, arterio-sclerosis, and enlarged heart. Diagnosis: First attack of melancholia, which started with fear and confusion. During the laboratory diet a certain listlessness, diminished motor activity, narrowing of mental horizon. May be an involution melancholia or a late manic-depressive condition, more likely the latter. Condition stable during experiment."—H.

Metabolism normal.

T. M. B. (table No. 46).

"Age 29. Physical condition good. Diagnosis: Dementia præcox with slow, insidious onset, two years' duration. Absurd delusions, scattered ideation, marked dementia."—H.

Metabolism normal.

C. E. C. (table No. 47).

"Age 68. Physical condition: good, very stout. Diagnosis: involution melancholia, with hypochondriacal ideas, narrowing of mental horizon, normal motor activity."—H.

Metabolism scarcely normal. The ammonia, the undetermined nitrogen and the organic sulphur are all outside the limits set by the control persons in table 8.

P. J. C. (table No. 48).

"Age 57. Physical condition: under weight. The condition is one of gastric neurosis, distress after eating, general soreness, occasional complaint of palpitation and much complaint of weakness, but there is nothing revealed on physical examination of heart, stomach or lungs. He has no real mental symptoms."—H.

Miss E. D. (table No. 49).

"Age 48. Physical condition: no abnormalities of vegetative organs, fairly well nourished. Diagnosis: manic-depressive insanity, depressed form, second attack. Marked agitation, but retardation in speech movements, depressive delusions, good grasp on surroundings. Condition stable."—H.

H. W. W. (table No. 50).

"Age 21. Good physical condition. Diagnosis: dementia præcox, with mutism and inactivity, but not stupor. Condition stable."—H.

E. B. (table No. 51).

"Age 24. Physical condition: good. Diagnosis: fairly marked dementia of dementia præcox of some years' standing. Normal motor activity."—H.

Mrs. I. M. (table No. 52).

"Age 36. Physical condition: well nourished but under weight. No disorder of vegetative organs. Diagnosis: katatonia. Three former attacks with recovery. Has been in a stupor, but during the diet period in a state of peculiar perplexity, with poor grasp on surroundings, poor memory, childish behavior, some diminution of motor activity. Possibly a state of permanent dementia."—H.

M. H. W. (table No. 53).

"Age 60. Physical condition: no disorders of vegetative organs except rather feeble pulse. Diagnosis: organic dementia of questionable origin, characterized essentially by a marked memory defect (but, unlike general

paralysis, not associated with a general breaking up of the personality, but with preservation of natural social reaction). With this marked alterations in gait and other nervous symptoms. The gait improved somewhat during the experiment and his memory became somewhat better."

48-53. The metabolism seemingly normal, but the analytical work not sufficiently complete.

W. F. (table No. 54).

"Age 44. Fair physical condition, no abnormality of vegetative organs. Diagnosis: manic-depressive insanity, excited form. Motor excitement of moderate intensity, but constant talkativeness. Intense flight of ideas with poor grasp on surroundings. Marked exhilaration. Condition very stable for months, and there is no appreciable difference during the three periods of laboratory diet."—H.

W. H. S. (table No. 55).

"Age 63. Physical condition: enlarged heart, some arterio-sclerosis, some tremor. Diagnosis: alcoholico-senile condition (up to some weeks before the experiment patient had been in a state of marked disorientation with hallucinations); during experiment a slight confusion, at times hallucinations, at times slight semi-stuporous attacks. Poor memory for recent events."—H.

A. C. (table No. 56).

"Age 29. Good physical condition. Diagnosis: dementia with apathy and scattered ideation of years' standing; dementia præcox."—H.

F. S. (table No. 57).

"Age 63. Physical condition: Under weight. No disorders of vegetative organs. Diagnosis: hypochondriacal involution melancholia of long standing. Deterioration with narrowing of mental horizon. About normal motor activity."—H.

B. B. (table No. 58).

"Age 70. Physical condition: rather under nourished, some arterio-sclerosis, with trace of albumin and casts in the urine at entrance. Diagnosis: manic-depressive insanity (?), depression, second attack, with some agitation, some fear, depressive delusions, but good grasp on surroundings."—H.

E. T. (table No. 59).

"Age 49. Physical condition: good. Diagnosis: manic-depressive insanity, depressed form. Slight feeling of inadequacy and depression. Whole condition very slight."—H.

F. C. (table No. 60).

"Age 66. Physical condition: fairly well nourished, some arterio-sclerosis, some emphysema. Diagnosis: manic-depressive insanity, depressed form. Very mild retardation, with marked feeling of inadequacy. Depression of feelings."—H.

C. E. D. (table No. 61).

"Age 44. Physical condition: good; has a wound from attempted suicide which is not yet quite closed and he has a temperature every evening up to 99.8°. Diagnosis: probably manic-depressive insanity; during the experiment he was practically well, having been well for some time, or there may have been a slight irritability and exhilaration; hence, if an active process, a very mild one."—H.

J. A. S. (table No. 62).

"Age 70. Physical condition: fairly nourished, rather pale, no disorder of vegetative organs. Diagnosis: manic-depressive insanity, with many repetitions of excitement. During the period of May 17 to 20, he was perfectly quiet and natural, but perhaps somewhat irritable. On the 29th of May an attack of excitement commenced, and during the period from June 4 to 7, he was in a state of moderate but constant motor excitement, with much exhilaration and irritability, and outbursts of anger, and with fairly well-marked incoherence of speech."—H.

Miss J. P. (table No. 63).

"Age 54. Physical condition: undernourished, with no disorder of vegetative organs except constipation. Diagnosis: manic-depressive depression, with great emotional depression and some restlessness; with the exception of stereotyped repetitions in her moaning, very little talk; and except for stereotyped rocking to and fro as an expression of her discomfort, markedly diminished motor activity. Good grasp on surroundings."—H.

Mrs. M. H. R. (table No. 64).

"Age 28. Physical condition: fairly well nourished; no disorder of vegetative organs except constipation. Diagnosis: manic-depressive insanity, with very marked motor retardation, moderate emotional depression and slowness in thinking. Good grasp on surroundings."—H.

Miss L. P. (table No. 65).

"Age 33. Physical condition: fair, no abnormalities of vegetative organs. Fair nutrition, but under normal weight. Diagnosis: manic-depressive insanity, depressed form, with diminished motor activity, but much greater diminution of mental activity, with dearth of ideas and poor grasp on surroundings. Condition stable."—H.

M. L. R. (table No. 66).

"Age 52. Physical condition: fairly well nourished, mitral insufficiency with some hypertrophy. Good compensation. Diagnosis: experiment made during convalescence from a short attack of excitement of questionable origin. Condition normal during experiment."—H.

R. D. (table No. 67).

"Age 42. Physical condition: good. Diagnosis: dementia of years' standing. Dementia præcox type. Normal motor activity."—H.

No. 80. Name, Mr. J. Y. W.—Weight about 70 kilos.

1903. 24 hours ending	Ratios.										Per cent of total N ₂ .														
	Sp. gr.	P ₂ O ₅ , mg. in 50 cc.	SO ₃ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₃ , mg. in 50 cc.	Neutral SO ₃ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, grms.	NH ₃ , cc. N	Kreatinin, grms.	Uric acid, gm.	Acidity.		Indican.	100 SO ₃ :				Urea.	NH ₃ .	Kreatinin.	Uric acid.	Boat.		
												Mineral.	Organic.		P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .						Etheral SO ₃ .	Neutral SO ₃ .
June	cc. in 24°	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	Titrated.							Sum.						
21	16 1480	88 2.46	63 1.86	34.1 5.04	17.65 8.19	294 3.996	876 3.328	111 1.12	278 278	70	23	19.6	53	132	11	5.4	86.6	4.2	3.4	1.1	4.7				
22	17 1270	85 2.16	60.3 1.53	41.02 5.23	14.57 6.80	234 3.338	753 3.279	386 111	245 245	125	28.1	20	69	141	8.3	15.1	87.8	4.27	3.6	1.16	3.7				
24	17 1750	97 3.39	83.9 2.93	29.1 5.09	28.99 13.48	482 6.646	130 4.855	300 100	560 560	70	21.5	18.7	32.3	115	9.3	11	85.9	4.1	3.09	.6	6.3				
25	14.5 2100	79 3.32	54.5 2.52	23.4 5.86	22.44 10.47	420 5.88	112 4.15	319 106	462 462	60	26.89	20	46.2	133	9	7.6	84.74	4.76	3.33	.86	6.3				
26	18 1325	99 2.62	84.9 2.30	35 4.65	19.99 9.53	338 4.60	901 3.335	239 176	324 324	100	24.05	21.1	42.6	114	9.6	16.7	85.6	4.22	3.07	.73	6.4				
27	19 1220	12.6 3.07	10.4 2.54	38.9 4.80	20.10 9.38	405 5.67	1.01 3.76	330 185	366 366	85	27.56	22.8	40.4	121	8.4	13.4	84.10	5.1	3.37	.83	6.5				
Average	1520	2.84	2.28	5.07	.261	11.17	.992 3.369	.291 1.11	372	80	25.4	20.4	45.4	124	9.3	14.4	85.94	4.44	3.3	.87	5.45				

No. 31. Name, Ma. W. { Weight, Oct. 26.....69.730 k.
 " " 30.....69.000
 Loss..... .730 g.

1903. 24 hours ending	Sp. gr.	Acidity.										Ratios.					Percent of total N.									
		P ₂ O ₅ , mg. in 50 cc.	SO ₂ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Ethereal SO ₂ , mg. in 50 cc.	Neutral SO ₂ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, gms.	NH ₃ , cc. N 10	Kreatinin, gms.	Uric acid, gm.	Mineral.	Organic.	Indican.	100 N ₂ :		100 SO ₂ :			Urea.	NH ₃ .	Kreatinin.	Uric acid.	Roet.		
															P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Ethereal SO ₂ .						Neutral SO ₂ .	
October	cc. in 24°	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	Total	Titrated														
26	26 615	161.1 2.95	132.7 2.43	46.8 4.28	5.2 .092	3.3 .06	71.5 13.06	23.68 11.05	595 .707	1.24 .457	438 151	458 220	238	85	22.5	18.5	32.7	121.4	3.9	2.5	84.6	5.4	8.5	1.3	5.3	
27	20 1460	102.5 2.99	94.5 2.78	35.5 5.18	5.6 1.64	2.9 .085	50.4 14.7	27.22 12.70	490 .686	1.31 .486	476 159	380 187	193	85	20.3	18.8	35.2	108.4	5.9	3.1	87.1	4	2.3	1.1	4.5	
28	18.5 1886	95 3.68	88.5 3.34	36.9 6.66	5.2 1.64	4.5 .17	47.88 18.08	33.73 16.74	538 .781	1.55 .57	537 179	506 ...	...	10	19.9	18.5	38.6	107.2	4.5	5.1	87.2	4.3	2.2	1	4.3	
30	24.5 1290	189 4.10	119.9 3.09	37.5 4.85	5.4 1.37	3.8 .100	63.1 16.23	30.04 14.02	573 .809	1.50 .583	527 176	528 268	325	15	25.2	18.9	29.9	132.7	4.5	3.2	86.3	4.9	2.4	1.1	4.4	
Average {	1390	3.41	2.91	5.39	1.47	1.04	15.53	28.67	532	1.40	485	454	263	24	29	18.7	34.1	117.4	4.7	3.5	86.25	4.65	3.4	1.1	4.6	
									.746	.517	166	326									96.9					

[illegible]

No. 88. Name, Mrs. R. { Weight, August 21.....40.860 k.
 " " 25.....41.294 k.
 Gain..... 364 g.

1908. 24 hours ending	Ratios.												Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	100 N ₂ :						100 SO ₂ :						Indoan.	Acidity.		Uric acid, gm.	Kreatinin, grm.	NH ₃ co. N 10	Urea, grm.	N ₂ mg. in 5 cc.	Etheral SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ mg. in 5 cc.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₂ .	Neutral SO ₂ .	Mineral.	Organic.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Sp. gr.	P ₂ O ₅ mg. in 50 cc.	SO ₂ mg. in 50 cc.	Cl ₂ mg. in 10 cc.	Etheral SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ mg. in 5 cc.	Urea, grm.	NH ₃ co. N 10	Kreatinin, grm.	Uric acid, gm.	Indoan.	Titrated	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. 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No. 34.	Name, Mss. G. W. P.	{	Weight, November 20.....	68.780 k.	
			"	" 28.....	62.700 k.
			Loss.....	80 g.	

[illegible]

No. 36. Name, Miss F. { Weight, Aug. 9..... 50.830 k.
 " " 14.....50.460 k.
 Loss..... 370 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .													
		100 N ₂ :					100 SO ₂ :					Urea.	NH ₃ .	Creatinin.	Uric acid.	Host.									
		P ₂ O ₅	SO ₂	Cl ₂	P ₂ O ₅	Bithereal SO ₂	Neutral SO ₂																		
August	cc. in 24°	Total	Total	Total	N ₂ mg. in 5 cc.	Urea, gms.	NH ₃ co. 10 N	Kreatinin, gms.	Uric acid, gms.	Mineral.	Organic.	Indican.	P ₂ O ₅	SO ₂	Cl ₂	P ₂ O ₅	Bithereal SO ₂	Neutral SO ₂	Sum						
9	1225	11.6	98.9	24.9	8.6	47.6	23.49	319	1.108	.365	.490	...	20	34.35	20.1	26.1	121	8.4	7.1	90.04	8.82	3.5	1	2.3	
		2.84	2.35	3.05	.198	.167	10.49	.446	.41	.118	.201	289								93.24	86.94	3.7	8	1.02	8.84
11	1250	11.1	102.6	24.9	7	4.2	24.49	340	1.06	.400	.495	...	60	21.68	20	24.2	108.2	6.8	4.1	88.94	8.7	3			
		2.78	2.57	3.11	.175	.105	11.43	.476	.39	.133	.205	260								82.04	89.76	3.8	3.44	1	2
12	1370	95.5	88.9	27.7	5.7	8.1	24.04	340	1.16	.375	.498	...	50	20.97	19.5	30.3	107.4	6.35	3.5	89.76	8.6	3.4	1	2	
		2.62	2.44	3.79	.155	.085	11.22	.476	.43	.125	.318	148								82.04	89.76	3.8	3.4	1.1	3.15
13	1240	11.4	98.8	27.7	5.5	8.2	22.39	322	1.07	.414	.461	...	70	23.78	19.75	29	121	5.8	3.4	88.5	8.6	3.4	1.1	3.15	
		2.83	2.33	3.43	.138	.080	10.45	.450	.40	.138	.362	99								82.35	90.6	3.9	3.65	1.16	.7
14	1410	93.5	81.7	33.4	6.2	2	22.32	322	1.313	.492	.507	...	110	24.2	20	41	121	7.6	2.4	90.6	3.9	3.65	1.16	.7	
		2.78	2.30	4.71	.176	.066	10.42	.450	.42	.134	.333	174								94.5					
Average	1360	2.77	2.40	3.62	.168	.099	12.06	329	1.104	.359	.475	...	60	22.96	19.9	30	115.4	7	4.1	89.55	3.8	3.4	1.65	2.2	
							10.50	.46	.41	.199	.284	194								93.35					

No. 37. Name, Miss F. { Weight, February 6..... 53.780 k.
 " " 12..... 53.000 k.
 Loss..... 220 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		P ₂ O ₅ , mg. in 50 cc.	SO ₂ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Ethereal SO ₂ , mg. in 50 cc.	Neutral SO ₂ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, grms.	NH ₃ co. N	Kreatinin, grms.	Uric acid, gm.	Acidity.		Indican.	100 SO ₂ :																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
												Mineral.	Organic.		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Ethereal SO ₂ .	Neutral SO ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
cc. in 24°	Total	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	Titrated</

No. 88. Name, Mm. P. E. { Weight, Dec. 21.....56.960 k.
 " " 25.....59.840 k.
 Gain..... 380 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		100 N ₂ :					100 SO ₃ :					Urea.	NH ₃ .	Kreatinin.	Uric acid.	Rest.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
cc. in 24°	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total

No. 39. Name, Mr. C. { Weight, March 18..... 55.850 k.
 " " 28..... 56.700 k.
 Gain..... 850 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Percent of total N ₂ .											
		100 N ₂ :					100 SO ₂ :					Urea.	NH ₃ .	Kreatinin.	Uric acid.	Heat.							
		P ₂ O ₅	SO ₂	Cl ₂	P ₂ O ₅	Ethereal SO ₂	Neutral SO ₂																
								Acidity.	Indican.	Mineral.	Organic.	Titrated	N. Total	Kreatinin, grms.	Uric acid, grm.								
March	cc. in 24°	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	Total	Total	Total	Total	Total	Total	Total	Total						
18	18	116	91.9	27	45	26	844	765	709	846	18	25.5	20.5	41.7	125	10.9	....	89.2	3.6	2	.92	4.3	
1510	1510	3.47	2.78	5.68	13.57	12.13	.481	.28	.133	.846	7	27.1	23	88	124	9.6	....	89.6	3.7	1.8	.89	4.1	
16.5	16.5	118	91.2	82	41	23.4	823	725	787	408	7	26.7	20	87	133	10.1	....	90.7	3.6	2.3	.87	2.5	
1785	1785	4.02	3.44	5.71	14.79	13.16	.550	.27	.126	.364	7	24.4	21.8	82	112	10	....	90.4	4	2.1	.84	2.7	
18	18	122.5	91.8	34	45.9	29.2	337	880	808	771	7	24	18	88	134	10.8	....	93.75	2.6	2	.92	4.7	
1640	1640	4.01	3.01	5.53	15.05	13.65	.532	.306	.181	.354	15	24.2	20	56	122	10.9	....	92.35	2.9	2.3	.96	3.3	
19.5	19.5	140	123.3	36	57.1	26.1	337	755	843	687	....	....	....	....	....	....	....	....	....	....	....	....	....
1180	1180	3.30	2.95	4.27	13.50	12.20	.532	.28	.114	.391	....	....	....	....	....	....	....	....	....	....	....	....	....
18	18	85	62.6	23	34.7	29.8	405	880	497	676	....	....	....	....	....	....	....	....	....	....	....	....	....
2255	2255	3.80	2.92	5.19	15.80	13.90	.568	.316	.146	.316	....	....	....	....	....	....	....	....	....	....	....	....	....
14	14	75	61.9	35	30.9	29.8	488	900	498	743	....	....	....	....	....	....	....	....	....	....	....	....	....
2475	2475	3.71	3.05	8.61	15.30	13.86	.600	.350	.146	.401	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	1506	3.79	3.01	5.83	14.67	13.15	.544	.81	.465	.792	.358	19	25.3	30.5	40	123	10.2	....	59.6	3.7	9	.92	3.5

No. 40. Name, Miss. E. M.—Weight about 80.800 k.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N.												
		100 N ₂ :					100 SO ₃ :					Urea.	NH ₃ .	Creatinin.	Uric acid.	Rest.								
		P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .																	
								Mineral.	Organic.	Indican.														
January	cc. in 24°	Total	Total	Total	Total	N. Total	N. Total	N. Total	Total	Total	Total	Total	Sum	Sum	Sum	Sum	Sum							
9	14 1540	53 1.78	31.24 2.10	8.2 4.81	5.5 1.70	31.22 9.61	18.30 8.64	61.6 .086	755 .28	191 .063	228 6	222 6	80	18.6	21.2	50	84.8	5.4	8.1	89.9	0.9	2.9	.66	5.64
10	15 1540	65 2.00	31.24 2.14	8.7 4.81	6.5 2.00	34.16 10.52	20.17 9.37	61.6 .086	755 .28	144 .048	233 84	279	36	19	20.3	45.8	98.5	5.3	9.3	89.1	0.8	2.7	.46	6.94
11	15 1560	70 2.18	31.2 4.86	8.5 1.20	5.6 1.76	36.56 11.00	20.74 9.68	74.9 .106	733 .27	192 .064	237 88	233	30	19.8	19.9	48.6	102.8	5.7	8.3	88.05	0.95	2.5	.60	7.9
12	16.5 1440	80 2.30	32.88 4.00	8.7 1.00	6.3 1.80	38.36 11.02	20.78 9.70	86.4 .121	77 .28	138 202	330 126	126	40	19	18.7	36.4	112.1	5.8	8.8	88.0	1.1	2.6	.40	7.9
13	15.5 1490	73.5 2.32	32.88 4.1	8.5 1.11	4.7 1.40	39.5 11.69	22.1 10.32	88.8 .124	74 .275	208 .068	426 219	207	40	19.8	17.8	35.0	111.2	5.8	6.7	88.3	1.1	2.4	.58	7.63
Average {	1512	2.12	2.1	4.5	.114	.173	10.77	20.40 9.54	74.6 .103	173 .655	331 156	175	35	19.3	19.6	43.1	101	5.4	8.2	88.7	0.97	2.6	.54	7.9

No. 41. Name, Mm. S. { Weight, April 8.....67.300 k.
 " " 14.....67.300 k.
 0

1902. 24 hours ending	Sp. gr.	Acidity.										Ratios.					Per cent of total N ₂ .										
		P ₂ O ₅ , mg. in 50 cc.	SO ₃ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₃ , mg. in 50 cc.	Neutral SO ₃ , mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, gms.	NH ₃ , cc. N 10	Kreatinin, gms.	Uric acid, gm.	Mineral.		Organic.	100 N ₂ :				100 SO ₃ :								
												Titrated	Indican.		P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .							
April	cc. in 24°	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	N. Total	Titrated		Indican.	P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .	Sum		Urea.	NH ₃ .	Kreatinin.	Uric acid.	Heat.
8	23.5 1280	143 3.78	117.6 3.01	36.2 4.63	9 .23	...	60.6 15.5	28.00 13.35	461 .645	1.415 .527	.68 .18	553 302	...	90	24.4	19.4	20	125	7.6	...	...	86	4.1	3.4	1.1	5.4
9	25 1215	157 4.06	130.7 3.18	46.9 5.68	13.8 .335	17.9 43.4	63.2 16.58	30.99 14.46	447 14.46	1.46 .84	.62 .21	627 341	...	90	24.5	19.1	24	127	10.6	13.6	87.8	90.1	3.9	3.8	1.2	4.3	
10	20 1525	131 4.00	101 3.08	41.2 6.28	10.4 .317	17 52.0	49.7 15.16	23.50 13.80	433 .607	1.4 .62	.64 .18	634 375	...	75	26.3	20.4	41	129	10.3	16.7	87.8	91.2	4	3.4	1.2	3.6	
11	29 1120	218 4.82	130.7 3.33	43.3 4.84	16.5 .369	19.7 44.1	36.58 19.7	36.58 17.07	596 .827	1.98 .72	.73 .24	941 565	...	75	24.5	17.1	25	142	10.9	13	88.7	91.8	4.2	3.5	1.2	4.4	
13	30.5 1040	238 4.89	177 3.68	48.3 6.76	16.5 .343	97 28.3	37.62 20.2	37.62 17.51	620 .87	1.79 .67	.66 .19	915 620	...	50	24.3	18.3	26.5	133	9.3	7.5	88.7	90.9	4.3	3.3	.9	4.8	
14	24.5 1180	147 3.50	129.4 3.08	62.7 6.27	12.5 .286	...	30.16 16.3	30.16 14.07	481 .67	1.45 .54	.63 .18	600 391	...	100	21.4	18.9	36	113	9.6	...	...	86.3	4.1	3.3	1.1	5.3
Average	1230	4.176	3.235	5.74	.315	.419	17.24	595	1.58	.59	.197	711 379	...	89	24.9	18.9	33.3	139	9.7	13.9	86.37	90.44	3.4	1.14	5		

No. 42. Name, Ma. S. { Weight, July 7.....40.100 k.
 " " 17.....41.200 k.
 Gain..... 1.100 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N.												
		100 N ₂ :					100 SO ₂ :					Urea.	NH ₃ .	Creatinin.	Uric acid.	Heat.								
		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	R ₂ SO ₄ .	Neutral SO ₄ .	Indican.	Acidity.															
									Mineral.	Organic.														
July	cc. in 24°	Total	Total	Total	Total	Total	N. Total	N. Total	Kreatinin, gms.	Uric acid, gm.	Mineral.	Organic.	Titrated											
7	25 1325	149.5 3.77	137 3.37	40.5 4.37	9.4 2.49	16.8 4.45	33.37 16.53	647 804	.75 .904	.888 1.13	834 424	107	120	112	19.1	24.7	112	7.4	13.2	87.95	5.3	1.6	.66	4.5
8	22 1260	127.5 3.20	109 2.75	42.6 5.37	7 1.76	14 3.63	27.32 12.75	539 713	.64 .713	.441 .524	479 153	323	120	117	18.8	26.8	117	6.4	12.8	87.34	4.91	1.63	1.01	5.1
10	25 1180	145 3.45	132 3.14	44.7 5.32	13.4 3.19	14 3.53	29.77 13.89	496 638	.63 .253	.494 .165	528 ....	....	150	110	19.8	33.7	110	10.1	10.6	88.5	4.31	1.6	1.05	4.6
11	26 960	132.5 2.54	130 2.50	47.6 5.57	14 3.69	....	24.80 11.57	333 494	.638 .254	.441 .147	372 ....	....	200	102	18.8	34.3	102	10.7	....	87.44	3.74	1.9	1.11	5.3
12	25 1020	135 3.36	124.5 2.54	32.7 3.38	7.9 1.61	....	23.63 11.05	412 577	.673 .250	.408 .138	449 ....	....	125	122	20.1	26.3	122	6.3	....	87.74	4.56	2	1.08	4.6
13	24 1210	133 3.22	113 2.74	45.4 5.50	6.6 1.60	7 1.69	37.3 13.9	....	.66 .245	.477 .159	319 ....	....	100	118	19.7	39	118	6	5.3	92.3	....	1.8	1.14	5.13
14	24 1200	134 3.70	118 2.83	42.7 5.12	8.1 1.94	11.3 2.71	32.5 15.00	633 863	.63 .253	.410 .137	384 ....	....	40	131	18.8	34.1	131	7	9.7	85.95	6	1.7	.91	5.5
15	24 1520	124 3.16	95.4 2.80	35.2 12.95	8.8 2.67	6.6 2.03	30 15.20	....	.70 .26	.476 .159	340 ....	....	75	109	19.1	35.2	109	9.2	7	91.93	....	1.7	1.05	5.1
17	21 1540	95 2.90	76 2.31	70.5 12.20	5.4 1.66	....	33.7 11.30	....	.61 .227	.319 .108	....	....	100	127	20.4	106.3	127	7.2	....	92.6	....	2	.94	5.6
Average {		1247	3.26	3.79	4.94	.215	.296	14.36	30.77 12.95	599 713	.678 .251	.474 .155	426 215	113	22.8	19.4	117	7.8	9.7	57.43 92.17	4.8	1.8	1	5.1

No. 44. Name, Mx. N. G. { Weight, April 19.....64.500 k.
 " " 25.....65.200 k.
 Gain..... 700 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N.																												
		100 N ₂ :					100 SO ₂ :					Uric acid, gm.	Kreatinin, grs.	NH ₃ , cc. N	Urea, grs.	N ₂ , mg. in 5 cc.	Neutral SO ₂ mg. in 50 cc.	Ethereal SO ₂ mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	P ₂ O ₅ , mg. in 50 cc.	SO ₂ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Ethereal SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, grs.	NH ₃ , cc. N	Kreatinin, grs.	Uric acid, gm.	Acidity.	Indican.	100 SO ₂ :				Urea.	NH ₃ .	Kreatinin.	Uric acid.	Rest.
		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Ethereal SO ₂ .	Neutral SO ₂ .																																	
April	cc. in 24°	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	N. Total	N. Total	Mineral.	Organic.	Titrated	60	36.6	20.8	51	129	8.5	9.9	89	28	2.7	.78	4.7														
19	17.5 1685	97.5 3.81	76.3 2.55	87 6.25	6.4 .217	7.5 .253	86 12.24	36 2.24	23.84 10.89	278 .389	.887 .112	543 251	291	60	36.6	20.8	51	129	8.5	9.9	89	28	2.7	.78	4.7															
20	18.5 1625	120 3.90	94 3.06	28 4.62	8 .260	8.2 .266	45 14.56	45 2.66	27.84 12.76	388 .473	.887 .129	680 358	292	60	36.8	20.9	33	128	8.5	8.7	88.75	3.25	2.6	.79	4.6															
21	18 1780	110 3.90	94 2.98	82 5.69	9.8 .347	9 .320	44 15.84	44 2.48	30.00 14	365 .498	.935 .344	410 271	369	25	34.7	18.8	36	181	11.6	10.7	88.4	3.1	2.2	.75	5.55															
22	27 910	180 3.27	134 2.43	39 3.55	14 .255	....	68 12.4	68 2.4	23.46 10.95	306 .428	.99 .34	546 298	248	5	36.3	19.6	39	180	9.5	....	88.3	3.4	2.8	.86	4.6													
23 { Days 14 hrs.	28 1710	195 6.67	144 4.92	80 5.13	13 .453	5.6 .191	71.4 24.42	686 21.58	46.24 15.890	686 .890	1.79 .67	680 601	521	50	27.3	20.1	21	185	9.2	4	88.4	3.7	2.7	.88	4.3															
24 { Nights 10 hrs.	17.5 3065	88 5.45	75 4.65	30 9.42	5.6 .343	5.8 .359	39 24.33	39 2.7	46.80 21.7	545 .763	1.55 .575	686 384	452	60	23.4	19.1	39	117	7.3	7.7	89.4	3.1	2.87	.75	4.4															
Average {	1545	3.79	2.94	4.95	.268	.198	14.83	14.83	28.14 13.13	351 .49	1.01 .377	693 314	36	36	25.55	19.5	33.4	139	9.1	6.7	88.7	3.3	2.55	.86	4.6															

(Gain..... 100 g.)

[illegible]

No. 46. Name, Miss E. B.

1908. 24 hours ending	Bp. 57. cc. in 24°	Ratios.										Per cent of total N ₂ .													
		P ₂ O ₅ , mg. in 50 cc.	SO ₂ , mg. in 50 cc.	Cl ₂ , mg. in 10 cc.	Etheral SO ₂ mg. in 50 cc.	Neutral SO ₂ mg. in 50 cc.	N ₂ , mg. in 5 cc.	Urea, grs.	NH ₃ , cc. N co. 10	Kreatinin, grs.	Uric acid, gm.	Acidity.		100 SO ₂ :											
												Mineral.	Organic.	Indican.	P ₂ O ₅ .	Cl ₂ .	Etheral SO ₂ .	Neutral SO ₂ .							
October	16.5 1355	Total	Total	Total	Total	Total	Total	N. Total	N. Total	N. Total	N. Total	Titrated	40	23	20.6	48.1	111.6	6.3	4.0	85.3	6.45	3.2	.80	3.7	
18	16 1355	85 2.30	76.1 2.06	35.5 4.81	2.9 1.06	2.9 1.06	37 10	18.27 8.53	461 .645	.835 .081	344 .081
19	16 1680	75 2.45	61.9 2.02	29.5 4.61	4.1 1.30	4.1 1.30	32.5 10.6868 .32	216 .072
Average }	1492	2.37	2.04	4.71	1.131	1.105	10.3	18.27 8.53	461 .645	.835 .32	341 .076	37.5	23.1	19.8	45.8	116.4	6.4	5.2	85.3	6.45	3.4	.74	3.85	

No. 47. Name, M.B. C. E. C.

23 Kilos Liquid Food + 900 cc. water.

[illegible]

No. 48. Name, Mx. C. { Weight, January 25.....75.800 k.
 " February 1.....75.240 k.
 Loss.....60 g.

1908. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂			
		Acidity.					100 N ₂ :					100 SO ₂ :			
		Uric acid, gm.		Mineral.		Indican.	P ₂ O ₅	SO ₂	Cl ₂	P ₂ O ₅	Richter's SO ₂	Neutral SO ₂	Urea.	NH ₃	Creatinin.
January	cc. in 24°	Total		Total		N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total	N ₂ Total
		cc. in 24°	gm.	cc. in 24°	gm.										
25	1085	160	3.47	187	2.97	71	29.06	443	668	60	22.4	19.2	81.8	117	87.7
26	1500	15.5	3.87	105	3.14	54	20.60	414	720	80	24	19.5	83	123	91.7
27	1550	20	3.94	101	3.13	54	21.22	408	775	100	23.4	18.7	40.6	126	92.4
28	1325	19	3.71	113	3.12	60	29.99	408	765	100	23.2	19.5	30.2	119	90.4
29	1580	20	3.88	98	3.08	52	29.42	504	696	65	23.5	18.7	36	126	90.8
30	1480	20.5	3.91	110	3.16	58	30.47	383	698	80	23.5	19	36	123	87.6
31	1875	20	3.84	116	3.20	58	30.47	383	698	80	23.5	19	36	123	87.6
February 1	1875	20	3.84	116	3.20	58	30.47	383	698	80	23.5	19	36	123	87.6
Average	1425	3.78	3.13	5.61	16.18	39.11	415	14.06	561	60	23.35	19.96	34.5	121	86.9
															88.06

No. 49. Name, Mrs. E. D.

{ Weight, Dec. 13.....48.035 k.
 " " 16.....47.800 k.
 Loss..... 235 g.

1922. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .																			
		100 N ₂ :					100 SO ₃ :					Urea.	NH ₃ .	Kreatinin.	Uric acid.	Rest.															
		P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .																								
December	cc. in 24°	Total	Total	Total	Total	N. Total	N. Total	N. Total	Kreatinin, grms.	Uric acid, gm.	Acidity.		Indican.	P ₂ O ₅ .	SO ₃ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₃ .	Neutral SO ₃ .	Sum	86.3	5.5				
13	17.5 1280	92.5 2.37	82 2.10	80.8 3.92	41.8 10.70	19.78 9.23	423 .590	26	22.1	19.6
14	14 1470	87.5 2.57	73 2.12	83.2 4.86	36 10.63	19.95 9.31	399 .559	50	24.1	20	46	121	
15	14 1075	92.5 2.00	79 1.70	80 3.23	40.3 8.67	16.52 7.71	305 .427	50	23.1	19.7	37.3	116	9.05	
16	15 1320	105 2.77	83 2.20	82 4.23	43 11.31	19.78 9.66	330 .530	100	24.5	19.5	37.4	126	7.7
Average	1286	2.43	2.03	4.07	1043	19.24 8.95	376 .596	426	60	23.3	19.46	39	119	8.4	86.1 5	91.1

No. 50. Name, Mx. W. { Weight, Nov. 29.....85.950 k.
 " Dec. 5.....87.410 k.
 Gain..... 1.460 g.

1902. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Acidity.		Indican.	100 N ₂ :				100 SO ₂ :		Urea.	NH ₃ .	Kreatinin.	Uric acid.	Beet.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		Mineral.	Organic.		Titrated	N. Total	N. Total	N. Total	N. Total	N. Total						N. Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
November	cc. in 24°	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total

Weight, Dec. 13.....57.900 k.

" " 20.....57.650 k.

No. 53. Name, Mass. I. M.

Gain..... 450 g.

1908. 24 hours ending	Sp. gr.	Ratios.												Per cent of total N ₂ .									
		P ₂ O ₅ mgr. in 50 cc.	Cl ₂ mgr. in 10 cc.	Ethereal SO ₂ mgr. in 50 cc.	Neutral SO ₂ mgr. in 50 cc.	N ₂ mgr. in 5 cc.	Urea, grms.	NH ₃ cc. N	Creatinin, grms.	Acidity.		Indican.	100 SO ₂ :				Urea.	NH ₃ .	Creatinin.	Uric acid.	Rest.		
										Mineral.	Organic.		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	Ethereal SO ₂ .						Neutral SO ₂ .	
February	cc. in 24°	Total	Total	Total	Total	Total	N.	Total	N.	Total	Titrated						Sum						
21	1835	67	53	26	186	30	21.3	298	302	100	420	3	18	41.4	126	...	87.88	3.67	...	...	.82	...
22	1280	84	73	30	300	38	17.5	307	388	...	384	16	24.2	42	116	...	87.3	4.6	...	...	1.3	...
23	1280	87	87	25	200	42	20.2	296	325	...	397	16	20.8	20.7	100	...	87.43	3.87	...	...	1	...
24	1125	100	84	25	16.9	43	16.9	306	364	...	421	16	23.1	19.4	30	119	85.6	4.4	...	...	.9	...
25	1065	110	92.4	32	840	49	19.4	340	316	...	405	8	22.2	19	32.3	119	86.27	4.53	...	...	1	...
		2.34	1.97	8.40	...	10.51	9.06	.476	...	...	...						90.8					
Average {	1337	2.99	1.95	3.64	...	10.24	8.89	.431	405	10	22.36	19.3	35.5	116	...	88.9	4.2	1	...
											91.1					

No. 53. Name, Mr. W. { Weight, February 16.....70.100 k.
 " " 26.....71.560 k
 Gain..... 1.460 g.

1903. 24 hours ending	Sp. gr.	Ratios.										Per cent of total N ₂ .						
		100 N ₂ :					100 SO ₂ :					Urea.	NH ₃ .	Kreatinin.	Uric acid.	Best.		
		P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₂ .	Neutral SO ₂ .											
								Mineral.	Organic.	Indican.								
February	cc. in 24°	Total	Total	Total	N. Total	N. Total	N. Total	Titrated	Mineral.	Organic.	Indican.	P ₂ O ₅ .	SO ₂ .	Cl ₂ .	P ₂ O ₅ .	Etheral SO ₂ .	Neutral SO ₂ .	
16	19 1760	90 3.17	88.6 3.12	40 6.84	40 14.22	26.8 12.27	479 1.64	684 ...	...	...	...	22.8	23	49	101	...	...	...
17	19 1560	111 3.44	86.8 2.69	31 4.84	48 13.87	24.8 11.37	897 1.99	604 ...	...	...	...	25.7	20.1	26	123	...	...	...
18	18 1875	100 3.06	81.2 2.84	34 6.72	41 16.30	30.0 14.22	879 2.43	781 ...	...	...	...	24.2	19.8	41	123	...	...	...
19	20 1600	120 3.60	95 2.85	36 5.42	47 14.07	27 12.56	298 1.09	600 ...	...	...	...	25.2	20.2	39	123	...	...	...
20	18 1610	120 3.66	86 2.77	31 5.02	44 14.11	26 12.23	847 1.21	740 ...	...	...	...	27.3	19.6	35	140	...	...	...
21	18.5 1525	125 3.81	92 2.80	29 4.42	45.5 13.87	26.5 12.37	828 1.35	732 ...	...	...	...	27.6	20.3	33	136	...	...	...
22	18.5 1625	128 4.14	95 3.08	31 4.46	49 16.41	29.6 14.25	864 2.68	845 ...	...	...	...	28.2	19	31	134	...	...	...
23	24 1825	162 4.04	109 2.89	34 4.52	57 15.68	29.8 13.77	838 2.45	796 ...	...	...	...	25.9	18.4	18	140	...	...	...
24	19 1860	116 4.16	84 3.34	37 6.99	44 16.75	31.5 14.68	498 1.89	880 ...	...	...	...	24.9	20	41.8	126	...	...	...
25	17 1875	98 3.79	74.1 2.93	37 7.30	37 14.48	27.5 12.83	896 2.66	710 ...	...	...	...	26.3	20.3	50.8	129	...	...	...
26	18.5 1825	111 4.07	86.7 3.16	37 6.86	42 15.70	29.1 13.97	886 1.35	786 ...	...	...	...	28	20.1	43.6	133	...	...	...
Average	1690	3.52	2.99	5.90	14.99	360 13.14	538 1.79	733	...	...	...	26.43	36	39.3	137.8	...	...	...
												57.66					1.17	...
												91.02						...

No. 54. Name, MR. W. F.

1904. 24 hours ending	Co. in 24°.	Sp. gr. 10—	N ₂ .		P ₂ O ₅ .		SO ₂ .		Ratios.		
			Mg. in co.	Total gm.	Mg. in 50 co.	Total gm.	Mg. in 50 co.	Total gm.	100 N ₂ :		100 SO ₂ :
									P ₂ O ₅ .	SO ₂ .	P ₂ O ₅ .
May 29	1510	18	50.7	15.29	121	3.67	91.3	2.77	24	18.1	183.5
" 30	1210	19	58.8	14.23	110	2.66	122.4	2.95	18.7	20.7	90.2
Average	1360	....	....	14.76	....	3.16	....	2.86	21.3	19.4	111.3
Aug. 12	1020	28	55.8	11.89	182.5	3.11	....	....	27.3	....	....
" 13	1410	16	44.4	12.62	90	2.54	....	....	20.3	....	....
" 14	640	24	71	9.10	225	2.88	....	....	31.6	....	....
Average	1030	....	....	11.00	....	2.84	....	...	25.8	....	....
Oct. 27	1775	23	46	16.55	107	3.31	....	....	23	....	....
" 30	1930	....	41.6	16.46	96	3.32	....	....	23.2	....	....
" 31	1830	22.5	53	14.61	111	3.34	....	....	23.4	....	....
Nov. 1	2090	....	39	16.37	90	3.78	....	....	23.1	....	....
" 2	1240	27	64	16.00	160	3.67	....	....	24.8	....	....
" 3	1130	27	67	15.79	155	3.66	....	....	23.2	....	....
" 4	1690	20	48	16.33	126	4.22	....	....	25.9	....	....
Average	1620	....	....	16.00	....	3.79	....	....	23.7	....	....

1902.

No. 55. Name, W. H. S.

April 27	1295	25	66	17.15	182.5	4.72	131.8	3.31	27.6	19.2	142.6
" 28	1265	26.5	68	17.18	187.5	4.74	130.3	3.31	27.6	19.2	142.2
Average	1280	....	....	17.16	....	4.73	....	3.31	27.6	19.2	143

No. 56. Name, A. C.

May 2	1080	23.5	64.8	13.35	192.5	3.98	129	2.66	29.6	19.9	148.8
" 8	1305	21	55.5	14.36	160	3.91	104	2.71	27.2	18.9	144.2
Average	1170	....	....	13.85	...	3.94	....	2.69	28.4	19.4	146.5

No. 57. Name, F. S.

May 2	1000	25	78	15.59	175	3.50	153	3.06	22.4	19.6	114.8
" 8	1025	26.5	71	14.61	160	3.28	137.7	2.82	22.4	19.3	116.6
Average	1015	....	....	15.10	....	3.39	....	2.93	22.4	19.4	115.5

No. 58. Name, B. B.

1902. 24 hours ending	Co. in %.	Sp. gr. 1.0—	N ₂		P ₂ O ₅		SO ₂		Ratios		
			Mg. in cc.	Total gm.	Mg. in 80 cc.	Total gm.	Mg. in 80 cc.	Total gm.	100 N ₂ :		100 SO ₂
									P ₂ O ₅	SO ₂	P ₂ O ₅
July 29	2450	12	89	19.28	65	3.22	76.5	3.74	16.7	19.4	86
" 30	1890	17	51	14.24	100	2.78	104	2.80	19.5	20	99
" 31	2100	12	97	16.7	75	3.16	64.5	2.71	20.1	17.2	116
Average	1960	....	....	16.41	....	3.05	....	3.68	18.6	18.7	99

No. 59. Name, E. T.

May 14	1425	23.5	60.6	17.27	160	4.56	112.8	3.16	26.4	18.3	144.8
" 15	1235	24	69	17.04	179	4.42	135.9	3.86	25.9	19.7	131.5
Average	1315	...	....	17.16	....	4.49	....	3.26	26.2	19	127

No. 60. Name, F. C.

May 6	1065	25	68	13.42	154.5	3.29	135.5	2.89	24.5	21.5	114
" 7	1070	25	64.7	13.97	171	3.60	134.3	2.90	26.3	20.7	128
Average	1070	....	....	13.69	....	3.49	....	2.89	25.5	21.1	121

No. 61. Name, C. E. D.

May 6	860	28	74.6	12.68	204	3.47	154	2.62	27.3	20.7	132
" 7	1075	28	78.9	16.07	197.5	4.28	146	3.17	26.7	19.8	135
Average	970	....	....	14.38	....	3.88	....	2.89	27	20.2	124

No. 62. Name, J. A. S.

May 18	1610	16	42.5	13.70	107	3.46	81.6	2.62	25.2	19.2	131
" 19	1200	18	55.3	13.51	135	3.24	118.9	2.85	24	21.1	114
Average	1405	....	....	13.60	....	3.35	....	2.74	24.6	20.1	123
June 5	1000	21	68.7	12.74	150	3.00	....	....	23.5	....	....
" 6	1120	20	57	13.71	145	3.24	....	....	23.7	....	....
Average	1060	....	....	13.22	....	3.12	....	...	23.6	....	....

No. 63. Name, Miss J. P.

1902. 24 hours ending	Cc. in 2%.	Sp. gr. 1.0—	N ₂		P ₂ O ₅		SO ₂		Ratios.		
			Mg. in cc.	Total gm.	Mg. in 50 cc.	Total gm.	Mg. in 50 cc.	Total gm.	100 N ₂ :		100 SO ₂ :
									P ₂ O ₅	SO ₂	P ₂ O ₅
Dec. 6	1200	15	41.4	10.77	73	1.91	77.9	2.08	17.7	18.8	94.8
" 8	875	25	58	10.16	100	1.75	121	2.12	17.2	20.9	88.3
" 9	890	18	54	9.54	115	2.06	98	1.65	22.6	17.1	122
" 10	860	16	48	8.21	56	0.98	....	....	11.7	....	....
Average	979	....	...	9.67	...	1.67	....	1.93	17.3	18.9	100

No. 64. Name, Miss M. H. R.

Sept. 29	1720	18	33	11.47	69	2.39	66	2.27	20.8	19.8	105
" 30	1635	.09	33	11.23	77	2.61	61	2.07	23.2	18.4	126
Average	1700	....	....	11.35	....	2.50	....	2.17	22.03	19.1	115

No. 65. Name, Miss L. P.

Oct. 19	1400	10	19.7	5.58	50	1.4	....	....	25.3	....	....
" 20	1625	12	30	9.87	72	2.34	....	....	23.7	....	....
Average	1500	....	....	8.3	....	2.0	....	....	24.1	....	....

No. 66. Name, M. L. R.

Aug. 24	1230	22	56	13.77	125	3.07	....	....	22.8	....	....
" 25	1190	24	60	14.59	122	2.81	....	....	19.6	....	....
Average	1210	....	....	14.03	....	2.96	....	....	21	....	....

No. 67. Name, R. D.

Aug. 20	1875	15.5	42.7	16.01	95.5	3.58	....	....	23.3	....	....
" 21	1200	23	78.7	17.71	187	4.48	....	....	25.8	....	....
Average	1540	....	....	16.80	....	4.03	....	....	24	....	...

It is believed that the above metabolism experiments constitute the most complete and extensive experiments on record in connection with the insane. What do they teach?

1. From a constructive, positive point of view it must be admitted that they teach very little that is tangible concerning mental diseases except for the strong suggestion which they contain that in general paralysis we have a disease which may be associated at one stage or another with some demonstrable metabolism disorder.

From among the other classes of the insane individual peculiarities or abnormalities of metabolism, i. e., pronounced variations from the standard values given in table 8 are also very numerous, but so far it has been found impossible to identify any one metabolism peculiarity with any particular form of mental disorder.

2. From a destructive, negative or critical point of view, it is believed that the data given prove the untrustworthiness of all those metabolism experiments, old and new, which report a "characteristic" "increase" or "diminution" of any of the urinary constituents included in this research (i. e., volume of urine, total nitrogen, urea, ammonia, uric acid, kreatinin, organic bases, total sulphates, ethereal sulphates, "neutral sulphur," phosphates, chlorides, organic or mineral acids, indican) as associated with any particular one of the ordinary mental disorders.

It is not claimed that such characteristic abnormal metabolism may not exist, but simply that the experiments recorded in the literature are insufficient to demonstrate the fact.

3. From a general physiological point of view it is believed that the data contained in tables 1-47 should have considerable value as furnishing exact figures for the composition of a large number of urines and as tending to throw light on the laws of the normal secretion of urine, but this aspect of the results it has been thought best not to discuss here (see, however, Vol. LX, page 720, *et seq.*).

On page 717 was discussed the necessity of "standard diets" in metabolism experiments of this kind. In the continuation of this work I expect to use the diet described in this paper and in addition another—a low nitrogen diet—which I have reason to believe will be even more adapted to bring out any metabolism characteristics that may occur in the patients examined.

Notes and Comment

ASSOCIATION OF SUPERINTENDENTS AND TRUSTEES OF INSTITUTIONS FOR THE INSANE IN PENNSYLVANIA.—A meeting of this Association was held September 22, 1904, at the Pennsylvania State Asylum for Chronic Insane at South Mountain. Twenty-eight persons were present, this being the largest number in attendance at any meeting since the organization of the Association. After an address of welcome by the president of the board of trustees, Henry M. Dechert, the buildings and grounds were inspected. Papers were read by Dr. Chase, of Frankford, and Dr. Murdoch, of Polk. The meeting was presided over by Dr. Hutchinson, of Dixmont, and the following were elected as officers for the coming year: President, Dr. John B. Chapin; vice-president, Dr. H. B. Meredith; and secretary, Dr. Morris S. Guth. The next meeting will be held in May at Polk.

ANNUAL MEETING OF FRENCH ALIENISTS.—The fourteenth annual meeting of *Alienistes et neurologistes de France et des pays de langue française* was held at Pau from the first to the seventh of August, 1904. The proceedings were opened by an address from the mayor of Pau, who was followed by Dr. Brisaud, the president of the congress, who made an address of thanks to the mayor and to others who had labored for the success of the congress. He then delivered the presidential address, which was a eulogy of Théophile de Bordeu, a scientist and physician who was one of the first to discover cerebral localization. As is customary at these meetings, there were three addresses made on topics of especial interest in neurology or psychiatry, and following the address there was a general discussion. At the present meeting Dr. Deny spoke of "Demences Vésaniques," Dr. Seno of "Localisations motrices dans la moelle," and Dr. Keraval of "Mesures à prendre contre les aliénés criminels." Dr. Deny's

address was followed by quite a long discussion, and apparently attracted more interest than did the others. The total number of papers read was somewhat less than at the preceding congress, but this is probably accounted for by the fact that there are many places of interest in and about Pau and more time was spent in entertainments and excursions than at preceding meetings. The next meeting will be held at Rennes, August 1, 1905, where the three subjects for discussion are Hypochondria, Ascending Neuritis, and Hydrotherapy in the Treatment of Mental Diseases.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The sixty-third annual meeting of this Association was held July 21 and 22, 1904, at the rooms of the Association, Cavendish Square, London. The address of the president, Dr. R. Percy Smith, was upon Paranoia, and was followed by a paper by Dr. G. E. Shuttleworth entitled, *The Educational Treatment of Young Epileptics*, and a paper by Dr. C. Hubert Bond entitled, *A Plea for the Closer Study of the Body-weight and its Relation to Mental Diseases*. Other papers were: *Further Histological Studies in the Localization of Cerebral Function*, by A. W. Campbell; *The Finer Anatomy of the Nervous System, with special reference to the Doctrine of Continuity as opposed to the Neurone Doctrine*, by John Turner; *The Psychology of Hallucinations*, by W. H. B. Stoddart; *Asylum Ideals and Improvements in the Care of the Insane*, by G. M. Robertson; *The Question of how to Provide Accommodation in regard to Chronic and Incurable Cases of Mental Disorder*, by J. M. Rhodes; and *The occurring Pauper Lunacy of Glasgow Lunacy District and the Provision for its Care and Treatment*, by J. Carswell. The annual dinner was held on the evening of the twenty-first at the Hotel Metropole, and a garden party was tendered the members of the Association by Dr. and Mrs. R. Percy Smith at the Botanical Gardens on the afternoon of the twenty-second. Judging from the titles of the papers, the meeting must have been an interesting one, and many of us will look forward with interest to the publication of the proceedings.

SECTION OF PSYCHOLOGICAL MEDICINE OF THE BRITISH MEDICAL ASSOCIATION.—The seventy-second annual meeting of the

British Medical Association was held at Oxford from the twenty-sixth to the twenty-ninth of July, 1904. The first session of the Section of Psychological Medicine was held on the twenty-seventh and was opened with the presidential address by Dr. Charles A. Mercier on Criminal Responsibility and Degeneracy, which was followed by considerable discussion. A lantern demonstration by Mr. David Orr and Dr. R. G. Rows on the degenerative lesions of the posterior columns of the spinal cord in paresis closed this day's proceedings. The next day Dr. J. Beard, of Edinburgh, read a paper entitled, Heredity as Viewed from the Biological Aspect, and was followed by Dr. König, of the Dalldorf Asylum, Berlin, on Heredity from the Psychiatrial Aspect. The remainder of this session was occupied with a discussion upon these two papers. The last day's session was principally given over to a discussion which was opened by Dr. Conolly Norman on Dementia Præcox, or the Premature Dementia of Pubescents and Adolescents, but papers were read by Dr. E. S. Pasmore, on How to Take a Family History, and by Dr. A. T. Schofield, on The Cure of Quackery. The annual dinner of the Association was held in the Hall of Christ Church on Thursday evening, the twenty-eighth, and was attended by about three hundred persons. An unusually large number of excursions and entertainments were arranged for.

APPOINTMENT OF DR. ADOLF MEYER.—The many friends of Dr. Adolf Meyer will be glad to learn of his appointment to the professorship of Psychiatry in Cornell University Medical College, made vacant by the resignation of Dr. Allen McLane Hamilton. Dr. Meyer's work at Kankakee, Worcester, and at present as director of the Pathological Laboratory of the New York State Hospitals for Insane, has made him so well known that it is unnecessary to more than mention him, as everyone is well aware that he is well qualified for this position. The JOURNAL extends its congratulations to Dr. Meyer.

DEATH OF DR. KARL WEIGERT.—It is with great regret that we learn of the death of Dr. Karl Weigert from apoplexy on August 5, 1904. Psychiatrists and neurologists owe a great debt to him for his perfection of methods of staining the central nervous

tissue which have so greatly facilitated the study of the pathology of mental and nervous diseases. Medical science in general owes much to his researches in bacteriology and pathological anatomy, which have laid the foundation for a considerable part of later research on these subjects. Dr. Weigert was fifty-nine years of age, and since 1884 had been Professor of Pathologic Anatomy and Director of the Pathologic Institute at Frankfort a. M. It is to be regretted that Weigert should have died without a commensurate recognition of his services to science from the German authorities.

ELECTION OF DR. C. K. CLARKE.—In accordance with the action of the Council of the American Medico-Psychological Association in St. Louis, in June last, Dr. C. K. Clarke, of Kingston, has been elected an additional editor of the American Journal of Insanity. We are gratified to announce that Dr. Clarke has accepted the position and will immediately enter upon the discharge of its duties.

MINUTE ADOPTED AT A MEETING HELD IN MEMORY OF DR. E. C. RUNGE AT ST. LOUIS, JUNE 2, 1904.—This assemblage, composed of professional and other associates of the late Dr. E. C. Runge, of those who witnessed his efforts in behalf of the afflicted, and their results, and of citizens brought together by respect for his memory and sympathy in the causes to which he devoted his life and energies, desires to give expression to some of the thoughts suggested by the occasion.

We recognize in the personality of the late Dr. Runge a rare combination of qualities; a brilliant mind, trained in many widely divergent branches of learning; the ability to make others the sharers of his mental treasures; a capacity for the strongest human attachments; the power and purpose for laborious effort and successful accomplishment sustained by a hope and enthusiasm whose genuineness made it infectious, and as the especial keynote of his character, an unswerving devotion to the true and right, which knew neither compromise nor retreat.

In the testimony given this evening by his colleagues in his chosen profession we have heard of the eminence to which he attained by his talents and his arduous endeavors; of the depths and

breadth of his scientific attainments; of the contributions with which he enriched the literature of medicine; and of the rare degree of success which attended his work among the insane.

We find in his management of the St. Louis Insane Asylum a record of administrative ability seldom equaled, and the exercise of gifts in the care and treatment of his wards and charges, rarely so fruitful in consequent good, and of which this community, claiming them as its own, may be justly proud.

We invite the attention of the people of this city and commonwealth to the obvious lesson to be derived from a survey of the aims and results of this one life; namely, that a devotion to the loftiest and purest ideals is not necessarily impractical, and further that it is our high duty individually to strive for the ultimate removal of those obstacles which interfered with the full fruition of Dr. Runge's hopes for the betterment of conditions in municipal administration, and which will remain as a bar to civic progress.

BENJ. CHARLES,

SIDNEY I. SCHWAB,

JOSEPH GRINDOW,

Committee on Resolutions.

PROCEEDINGS OF THE ASSOCIATION OF ASSISTANT PHYSICIANS OF THE OHIO STATE HOSPITALS.—The fourth session of the Association of Assistant Physicians of the Ohio State Hospitals was held at the Columbus State Hospital, Columbus, Ohio, October 5 and 6, 1904.

Afternoon Meeting, October 5.—Dr. George Stockton, superintendent of the Columbus State Hospital, made a short address of welcome.

William W. Richardson, of Columbus, presented a patient in whose case a diagnosis of syringomyelia had been made, and gave full clinical details.

Isabel A. Bradley, Columbus, presented three brain tumors. Two were sarcomata involving the left frontal lobes. The third was a large glioma occupying both lateral ventricles and involving the corpus callosum, fornix, and septum lucidum.

E. E. Gaver, Columbus, gave a brief report of eight cases of tuberculosis treated in the open-air colony at the Columbus State Hospital.

Guy H. Williams, Columbus, showed the pathological specimens from a case of sudden death, found at autopsy to be due to an aneurism of the heart.

G. T. Harding, Jr., Columbus, exhibited a patient, 9 years old, with slight hereditary predisposition, showing psychical attacks varying from short periods of depression to spells of subconsciousness of several hours' duration, in which the child acts very differently from her normal self. The attacks are preceded and accompanied by a slight rise of temperature, excessive action of the heart, and a feeling of sickness over the sternum. A tentative diagnosis of psychical epilepsy was made.

Ralph W. Holmes, Gallipolis, read a paper entitled, "Clinical Observations of Status Epilepticus." This paper was discussed by E. E. Gaver, F. D. Ferneau, G. T. Harding, Jr., I. A. Bradley, and R. W. Holmes.

Guy H. Williams, Columbus, read a paper entitled, "Arteriosclerosis of the Brain, with Report of Case with Autopsy." N. H. Young, G. T. Harding, Jr., E. E. Gaver, W. H. Pritchard, I. A. Bradley, and G. H. Williams discussed the paper.

Morning Meeting, October 6.—Mary E. Cadwallader, Dayton, read a paper entitled, "A Report of Two Cases of Insanity of Pregnancy and Puerperium." The discussion was by F. D. Ferneau, G. T. Harding, Jr., and M. E. Cadwallader.

Paper: "Laboratory Aids in the Rapid Diagnosis of Hydrophobia," by Walter H. Buhlig, Gallipolis, was read. Discussion by I. A. Bradley, K. S. West, F. D. Ferneau, R. W. Holmes, and W. H. Pritchard.

Following the completion of the program the business of the Association was taken up. Isabel A. Bradley, Columbus, reported the work of the dietary committee. This committee was enlarged to include one member from each state hospital. E. E. Gaver, Columbus, reported the work of the legislative committee. Ralph W. Holmes, Gallipolis, chairman of the special committee to represent the Association at the Cleveland meeting of the Ohio State Medical Association, reported the passage by that body of the following resolution: "Resolved, That the Ohio State Medical Association hereby expresses its approval and endorsement of the object and work of the Association of Assistant Physicians of Ohio State Hospitals."

W. C. Kendig and J. W. Mann, of Longview Hospital, Cincinnati, and E. B. Morrison and Arthur G. Helmick, Gallipolis, were elected to active membership.

The next session will be held at the Dayton State Hospital, Dayton, Ohio, April 5 and 6, 1905.

RALPH W. HOLMES, Secretary.

RETIREMENT OF DR. A. E. MACDONALD.—The retirement of Dr. A. E. Macdonald, on account of ill-health, from the superintendency of the Manhattan State Hospital, East, upon October 1, 1904, after a period of service of upwards of thirty years, is sincerely regretted by all who know him. It is the earnest wish of his many friends that a prolonged period of relief from official cares and responsibilities will be followed by his complete restoration to health. He has labored earnestly and faithfully among the insane of the City of New York and has earned the right to rest.

Dr. Macdonald has removed from the Manhattan State Hospital, East, to Columbia Court, 431 Riverside Avenue, New York.

Book Reviews

Lectures on Diseases of the Nervous System. Second Series. Subjective Sensations of Sight and Sound, Abiotrophy, and Other Lectures. By SIR WILLIAM GOWERS, M.D. (Philadelphia: P. Blakiston's Son & Co., 1904.)

There are ten lectures included in this collection and the above title includes the titles of three of them. The titles of the others are: Myopathy and a Distal Form; Metallic Poisoning; Syphilitic Diseases of the Nervous System; Inevitable Failure; Syringal Hæmorrhage into the Spinal Cord; Myasthenia and Ophthalmoplegia; and The Use of Drugs.

The first of these lectures deals with the subjective sensations of light which have been noted as occurring in migraine and epilepsy, and which Dr. Gowers believes are due to lesion of the cerebral center. In the second lecture the author discusses subjective sound association, here also laying especial stress upon the part played by the cerebral cortex. He holds that the character of labyrinthine sounds is to a large extent influenced by the cerebral center, and leaves the consideration of this subject with great regret.

The third lecture is of especial interest as the author discusses the condition to which he has applied the new term "abiotrophy." This he defines as diminished vital nutrition, and gives as examples of the condition the falling out of the hair in the middle life, muscular dystrophy, and the neural conditions known as scleroses. The fourth lecture on Myopathy illustrates a special form of abiotrophy. In the treatment of this form Dr. Gowers considers muscular exercise as the one agent capable of causing an arrest of the degenerative process.

Under Metallic Poisoning are discussed the effects of lead and arsenic.

In the lecture upon Syphilitic Diseases of the Nervous System the author presents "some general principles concerning the most important practical branches of the subject," which shall serve especially to guide in the prognosis and treatment. The former can only be made by discovering whether the causal element can be removed, and to what degree the neural elements can recover. In the treatment he suggests no new remedy but discusses in considerable detail the best methods of using mercury and the iodide. The seventh lecture on Inevitable Failure is a study of syphilitic arterial disease and begins with a description of a most interesting case which is followed by a thorough discussion.

The last three lectures like all of the others are extremely interesting and it hardly seems necessary to state that this book will well repay a perusal

by all who are interested in neurology. To those who are familiar with this writer's first collection, it is needless to speak of the charm which Dr. Gowers gives to all of his writings. His happy faculty of describing unusual symptoms which most of us are too apt to dismiss as interesting, or inexplicable has given us two very interesting papers in this volume.

W. R. D.

Ueber die Frage des Heiratens von früher Geisteskranken. Von HEINRICH SCHULE. (Leipzig: S. Hirzel, 1904.)

This is a reprint of a paper read at Göttingen, in April of the present year, before the Jahresversammlung der deutschen Psychiater. It consists of twenty-six pages and the author explains that he has treated of the same subject in an address delivered in 1888, before the same society. He reviews the opinions of those who have commented on the earlier paper, and then proceeds to discuss the question of the marriage of those who have been insane, at some length. He does not reach a positive conclusion but makes a plea for further investigation upon this question, and in order that uniform results may be acquired gives a classification of mental diseases and a form of questions to be adopted. The paper is a most interesting one.

W. R. D.

Publications of Cornell University Medical College. Studies from the Department of Neurology, Vol. 1, 1904, New York City.

This volume consists of clinical and pathological studies completed in the Department of Neurology during 1904, and here published for the first time, and of reprints of papers which have previously appeared in various medical journals. In the first group are seven papers by Drs. Charles L. Dana and J. Ramsay Hunt, and in the second twelve papers by the above and Drs. Joseph Fraenkel and T. W. Hastings. Lack of space forbids detailed mention of these papers which it is hardly necessary to state are all of considerable merit. Each paper is preceded by an abstract in Latin by Dr. A. Avellanus, which will doubtless be of value to foreigners. Like a number of other publications of this kind the pages are not of uniform size, the type is of many varieties and there is an absence of consecutive paging. These irregularities detract from the appearance of the book but doubtless materially decrease the expense of its publication. It is certainly convenient to have the papers of this group of workers gathered together into one volume.

W. R. D.

Ueber den Moralischen Schwachsinn des Weibes, von Katinka von Rosen. 2 auflage, Halle, 1904, Carl Marhold.

This pamphlet is an endorsement of the misogynistic ideas of Moebius and an attempt to go him one better by proving that women are naturally deficient in moral sense. In a foreword to the present edition Prof. Moebius declares that "moral imbecility" is included in the term "physi-

ologische schwachsinn" and that a correct title for this work is Ueber den physiologischen Schwachsinn des Weibes in Moralischen Hinsicht. The work proper covers thirty pages but the pamphlet is expanded to forty-eight by means of three forewords, and letters and press notices. It is rather entertaining.

W. R. D.

Dementia Præcox: The Psychoses of Youth, I. By HANS EVENSEN. (Christiania, 1904.)

This excellent monograph is written in Norwegian, and it seems to the reviewer that its existence and main features ought to be made known to American alienists, to a majority of whom every new contribution concerning dementia præcox is certain to be of interest. Every phase of the subject is thoroughly treated, and all statistics and conclusions are based on the author's personal study of 300 cases, observed during his service at the Gaustad asylum near Christiania. The onset of these cases was between the ages of 14 and 26. Cases coming on later have not been included, as the author is dealing only with the psychoses of youth. In the preface he announces his intention to treat the subject of manic-depressive insanity in a similar way in a future volume. In the main the author shares Kraepelin's views, and, like him, emphasizes the importance of clinical methods, not at present finding much aid from pathologic histology, chemistry and experimental psychology. His conceptions of hebephrenia and katatonia as sub-classes are like those of Kraepelin. He does not devote any chapter to the paranoic form, as he has had no difficulty in placing all his juvenile cases under two other forms. He also intimates that Kraepelin has transferred too much of the true paranoia to his paranoic form of dementia præcox. Only a few complete case histories are given, but the admirable and thorough discussion of special symptoms is freely illustrated by the author's observations. Thirty good text-illustrations are given. Useful tabulations are made of the occurrence of various symptoms, etiologic factors, etc., in his own cases, thus giving us a positive, though, as the author himself states, a modest addition to our sum of carefully observed facts concerning this disease. The chapter on peculiarities in speech and writing is very thorough and profusely illustrated. The author deplores the lack of attention that has been given to somatic symptoms by others and gives detailed consideration of them. After the discussion of the various symptoms, hebephrenia and katatonia are given separate chapters. Then comes a very clear historical review, in which, as may be expected, much credit is given to Kahlbaum, the father of katatonia, especially for his emphasis of the study of the evolution and order of appearance of both psychic and somatic symptoms, and for subordinating symptomatic forms under a higher unit, while the author disagrees with Kahlbaum in the latter's optimism as to prognosis. Kraepelin is naturally credited with having gained recognition for Kahlbaum's views and for further enlarging them, giving Kahlbaum's katatonia its place as a group of dementia præcox. In considering

the present status of the dementia præcox question in various countries it is stated that in England etiologic classification is the favorite, while American literature gives more evidence of influence from Germany. Mention is made of Kiernan's paper on katatonia before the New York Neurological Society in 1877. While aware that katatonia is not even mentioned in Berkley's text-book, and not considered a clinical entity by Langdon and Peterson, the author believes that Kraepelin's views are now gaining ground in America, the papers of Sprague and Hill (1900), Dercum (1901), and Dunton (1902) being cited in evidence. Very interesting is a chapter entitled "Psychologic Considerations." Here an attempt is made to analyze the katatonic symptoms—stupor, suggestibility, stereotypy and negativism—and establish their analogy with the phenomena sometimes observed in normal people whose minds are entirely occupied by one thought. Such people will sit immobile, oblivious to what is going on about them (Archimedes), and of their organic wants, such as hunger, thirst, desire to urinate, defecate, etc. In a moment of less preoccupation these desires may suddenly make themselves known with irresistible force. Peculiar attitudes and automatic movements are frequent, and a thoughtless "don't know" or "yes" in reaction to questions the meaning of which is not appreciated, the answer often depending on the intonation or form of the question. Many such similarities are brought forward and the suggestion is offered that the essential in both the preoccupied and katatonic person is the "narrowing of consciousness around a central content." The analogies between the katalepsy and echolalia induced by hypnotism and katatonic stupor are also considered in favor of the explanation offered. The last two chapters deal with etiology and differential diagnosis in a lucid manner. The work is so promising that we feel tempted to suggest to the author to have this volume translated and have the succeeding volumes appear in English or German so as to make them accessible to the world at large.

Adolescence: Its Psychology and Its Relation to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education. G. STANLEY HALL, Ph. D., LL. D., President of Clark University and Professor of Psychology and Pedagogy. (New York: D. Appleton and Company, 1904.)

I have been asked, in reviewing this work, to consider it in its broad philosophical aspect rather than from the standpoint of the neurologist or the student in any particular field; but, on account of the space which the author has given to statistics and his conclusions therefrom, it will be necessary, in order to give a true impression of the value of the book, to devote some attention to that element in its composition.

The book is avowedly based upon the author's as yet unpublished Psychology, the standpoint of which is provisionally indicated in some of the chapters of the present work. Several points upon which modern psychologists are already well agreed are insisted upon at the outset: such as the insufficiency of introspection, and the importance of observation,

description, and induction; the value of animal, savage, and child psychology, as well as of the study of the abnormalities of the criminal and the insane; the applicability of the concept of evolution or development, and the connection between ontogeny and phylogeny—the development of the individual and the development of the race.

The first four chapters are devoted to the general physiology of adolescence—growth in height and weight and of the various parts and organs of body and mind characteristic of that period. “Juvenile faults, immoralities, and crimes” form the subject of the fifth chapter.

The psychic traits of adolescence include increased liveliness of imagination, and willingness to attempt almost impossible feats; inner absorption and reverie; self-criticism, inclined sometimes to become morbid; over-assertion of individuality, and the cultivation of eccentricities; fondness for imitating, and dramatic activity; foolishness and silliness, as shown in many college songs and customs; change and enlargement of vocabulary; and general widening of social life, sometimes, however, counterbalanced by extreme bashfulness. About fifty pages in all are devoted to the mental and nervous disorders of adolescence, but there is little in those pages which seems to call for further notice here.

President Hall affirms his standpoint with regard to the human soul to be that of “a new and higher monism and an evolutionism more evolved.” He protests against the excessive concern as to the future state of the soul, the slight interest taken by religion in the question of its origin and the “not only unscientific but almost abnormal aversion to consider its past.” This may be due in large measure to the fact that the philosophical mind aims to classify everything according to a formulated scheme, and so is unable to grasp the significance of genetic psychology. Hence the disposition to neglect criminal, child, race, and abnormal psychology—all of which are in reality very important auxiliaries to the study of the normal adult human soul. Furthermore, mind and body are interconnected, and each can be known only in its relation to the other. Hence biology and psychology are inseparable sciences. The soul is, like the body, an organized unity, and reflects the growth of every part and organ of the latter. They have the same problems with regard to the influence of heredity and environment on their development. Moreover, the soul is sexed, and, as in the case of the body, individuation and sex-differentiation are augmented at adolescence. The soul in the lower animal species is indistinguishable from life, and mind is probably coextensive with life, or at least with animal life. Here the will to live is the elementary mind-substance, and food-getting is the first function of the soul.

“The salvation-motive is unscientific.” The student must drop soteriological influences, and recognize that the human soul is like the body, a product of heredity, and still imperfect. Such is the conclusion to which we are driven by a strict adherence to scientific and evolutionary methods.

In a chapter on Intellectual Development and Education, in the midst of his treatment of the condition of college and university education, the

author interpolates his own views on the fundamental metaphysical problems. He protests against the "aberrations of epistemology and metaphysics," and pleads for purely empirical methods in the discussion of philosophical questions; but, notwithstanding this emphatic declaration, we have in the table of categories which he has drawn up—the fundamental character of which he insists upon—a formulation of principles that are neither empirical in their origin nor rational in their development. These "necessary postulates" are asserted categorically to be six in number; namely, Space, Ether, Force, Law, Fulness of Life, and Good-will seen in the *Survival of the Best*. In the first place, (1) Euclidean Space is declared to be absolutely universal and infinite; it cannot be transcended or thought away; it is immediate and presuppositionless; it is at once the principle of reality and the principle of negation, pure being and pure nothingness. (2) The category of Ether is identical with that of being, for all particular being is defined through the relation of ether to space: this ether is structureless, homogeneous, continuous, non-material; it is the source and destiny of all things, and all physical and vital energy is resolvable into it; it is known only to mind, and not at all to sense; finally, it fits every valid definition of substance or ultimate reality, and satisfies the ontological argument for the being of God. (3) The world of the senses is essentially dynamic—there is no dead or inert matter; all forms of existence follow the principle of conservation of energy, that the greatest quantity of Force possible in the world exists now, either latent or potent, and this force man must interpret always in terms of will. (4) Experience, and reflection on nature and society, bring Law into the world: There can be no chaos or chance, and all sequence involves a cause. But (5) this mechanical view must ultimately be subordinated to Life, which is ever evolving higher and higher orders of existence; and thought demands the maximum quantity of life possible in the world. Finally, (6) the doctrine of evolution, which affirms that the best always survives and that development is upward and creative, arouses the spirit of Optimism: pain tends toward extinction, but the abundance of life is increased by the pleasure which it contains, whereas growth and culture are marked by a steadily widening field of pleasure. These principles being set forth thus dogmatically, the author can hardly hope to arouse immediate conviction in the minds of his readers; but the latter are on their part in no position to criticise those principles until they have received fuller elucidation and discussion in the general work which Professor Hall has promised us.

As puberty is primarily that period in the development of the individual in which the organs that distinguish sex are brought to their highest point of differentiation, a large part of the book is devoted to the general problem of sex. Next to this, perhaps, comes the consideration of religion in its relation to adolescence, and the connection between religious devotion and sex love is strongly insisted upon. There is a natural synchronism between sexual and religious awakening, the ordinary age of conversion being the same as that in which the sexual organs attain their highest

development, and a new interest in religious matters being synchronous with a newly aroused interest in matters relating to sex. True and deep religious or sexual experience is almost impossible before adolescence. Nor is any degradation of religion involved in this acknowledgment of its relationship with sex. Religious and sexual love rise and degenerate together; for the latter is the religion of the flesh, as religion is the love of the spirit. Both suggest death and triumph over it, for both the lover and the religious enthusiast profess themselves willing to die for their ideal, and yet remain conscious that spiritual and fleshly love are alike stronger than death. Christianity has done much to refine the commonly gross conceptions of sexual love, for by it the love of God is elevated above all other loves, and yet sex love is recognized as symbolic of the love between God and man, as where St. Paul makes the union of the sexes in marriage the type of the union between Christ and His Church in the Sacraments. Love is the greatest thing in the world both for religion and for sex; it is, moreover, essentially creative in every sphere, for it sensitizes the soul to nature, and is a source of inspiration in art, science, and literature.

The superlative importance of the sex element in human life is fully appreciated by President Hall. All the organs and functions of the adult, even the average term of life, are regulated to meet the necessities of reproduction and education. A chapter is devoted to sexual development in general, and its dangers and hygiene in boys; and another is concerned with periodicity as the chief sexual function in the adolescent woman, the author pleading for a recognition of this function as one of which woman should be proud, rather than ashamed as has so often been the case.

Adolescence is the period in which for the first time there arises the consciousness of sex as a prominent factor in life. It is a new birth of both soul and body, marked by an awakening of latent faculties and a broadening of mental vision. A new and fuller meaning is given to life, and the budding man or woman is brought to realize his or her function as a servant of the race and a necessary instrument for its preservation and development. This novel condition in the life of the individual cannot be expected to come and pass without leaving its trace—be it light or heavy—upon character, and President Hall most properly devotes considerable attention and necessarily plain talk to these matters. He fully recognizes the importance of guarding youth against the prude on the one hand and the quack on the other, and insists on the necessity of careful but plain instruction to those who are passing through this vital period in their lives as to its normal significance as well as to the dangers and temptations which are likely to obstruct its path. The ignorance in which the well-meaning parent so often leaves his child, and the error with which those to whom he may turn in his vague yearning for knowledge so often poison his mind, are alike ominous for his future. At adolescence, sexuality evolves as a new function, which arises as a blind instinct, and to this, rather than to deliberate knowledge and purpose, the sexual crimes

of youth are generally due. The truly "momentous inference" which President Hall draws from his investigations in the field of sexual immorality is "that there is almost no feature, article of dress, attitude, act, or even animal or perhaps object in nature, that may not have to some morbid soul specialized erogenic and erethic power."

The chapter entitled "Adolescent Love" is really concerned with the general problem of the relation between the sexes, and is in many respects the most interesting to the philosophical student and the general reader. It is a finely written panegyric on sexual love in its purest—that is to say, its normal—form. Love is the religion of the flesh, and it is natural that the sex principle in nature and in human life should, at some period or periods in the course of history, have been regarded as an object of religious adoration. Nor is this "phallic worship," as it has come to be called, essentially associated with evil practices, though as a matter of fact its history is almost unprintable. At best, it must remain only an imperfect stage in the development of religion, and must lead in the natural course of events to something higher. This higher development appears in the veneration of motherhood which has been such a noted feature of the Catholic religion, whose devotion to the Blessed Mother of our Lord as the type of all mothers has been so falsely termed "Mariolatry" among those who acquire all their knowledge of church doctrine either second-hand, from the avowed enemies of the church, or else from the practices of ignorant individuals within its borders.

The periods in the ontogenetic development of the true sentiment of love are traced in an interesting manner from the early asexual "love" of the child, through the vague instinctive sex-sense of the adolescent. This true love can arise only in maturity and when it comes it invariably imparts, to him or her who has not already tasted of forbidden fruits, a tremendous stimulus to mental, moral, and spiritual growth. Sex consciousness must be early recognized and cultivated, else it will be perverted; strict chastity of mind and body should be rigorously maintained until maturity. If normal conditions are so preserved, spiritual and physical union will coincide. This the author well calls the polarization of life, which opens up an entirely new life to the soul, and fills it with hitherto unknown rapture. Early unchastity is found to destroy what is best in this normal experience. The end for which sex is developed is the formation of a new personality, but reproduction must always partake of the nature of a sacrifice, for the individual must soon begin to decay after reproductive power is lost, and nature transfers her protection to the offspring—or rather the species as a whole. Moreover, interest in the offspring is now superimposed upon the love between the parents, and without this new interest love is incomplete.

It will be impossible to review at length President Hall's conclusions on the relation of adolescence to religion, education, and sociology, beyond what little has already been said on these portions of his book. One chapter is devoted to religious ceremonies, including savage public initiations, the

institutions of classical antiquity, the ceremonies of medieval knighthood, and Jewish and Christian rites of initiation into full membership in the Church. Adolescence has been recognized by all religions as a formative period in the life of the individual. It is the age of religious as well as sexual awakening and conversion, in all its many forms; of that inner change of heart of which the various rites of confirmation are or should be the outward expression. The Psychology of Conversion, then, becomes the subject of another chapter. In this chapter President Hall takes occasion to criticise in a footnote one of the most eminent recent treatments of that subject—the Gifford Lectures of William James, of which he says that “many if not most of these ‘experiences’ are the yellow literature of religious psychology,” and so incapable of properly explaining normal religious life and development.

The Bible President Hall calls “man’s great text-book in psychology,” not a text-book in theology. Conversion he conceives as an “at-one-ment” between man and God after an apparent estrangement or “heterisation,” a reinstallation of the individual or race into its true place in the world; and he protests against current tendencies to regard it as an instantaneous process, to intensify its causes and effects, to conceive a conventional type to which all particular cases should conform, and to remove it from its proper place in the period of adolescence.

Religion in general is defined with etymological literalness, as re-binding, bringing back, or restoration. “As natural, it is re-established unity with nature; as ethical, a reunion of conduct with conscience; as theoretical, it is a re-at-one-ment of the mind with truth; as feeling, it is the ecstatic closing in again of the highest love with its supreme object, or fresh impulse along a forsaken but recovered path.” How far President Hall thinks religion has in its practice sunk below its ideal may be seen from the following quotation, the justice of whose implications, however, I am unable to accept: “In the name of youth I postulate and await without a shadow of doubt or fear (1) broader conceptions of the human soul; which in this field lives far more by feeling and instinct than by reason, that faith, the greatest of all its faculties, be rescued from present neglect and degeneration; (2) loftier ideas of scripture that shall make it not a fetish but the true and living logos of the human heart and will, never finished and complete in the past, but a never-ending progressive revelation of which the prophets and Jesus gave us only the beginning; and (3) eternal warfare upon orthodoxies and all dogmatic finalities, which are only the petrifications of faith, ultimately connected in ways psychology is only just beginning to see with the devitalization of life and mind caused by past or present sinful excesses.”

Education in general is given a chapter; and the question of the higher education of women, including the coeducation of the sexes, with its influence upon marriage and fecundity, is treated in another. Sociology, we may say, is given two chapters. Another chapter treats of adolescence in Literature and Biography, taking its instances from Greece (especially

the Platonic dialogues, whose studies of youth President Hall particularly admires), Christian history (our Lord's disciples, the early and medieval saints, and the men of the age of chivalry), and recent biography.

It is time now to close up our account and to arrive at a general estimate of the value and place of this work in the field of investigation with which it is concerned. And at once it should be said that this is not only the first considerable publication of its eminent author, but is the first and at present the only comprehensive study of the period of which it treats. It is the result of years of investigation and painstaking collection of material from every possible source that may have the slightest bearing on the subject. One of its indices contains some two thousand names of those whose work is quoted in the body of the book. It will thus ever remain a monument to its author's indefatigability, and a center from which all future work in this field must radiate, and to which investigators must continually turn for reference and for inspiration.

The constant use of long, rare, and often, perhaps, newly coined words throughout the book strikes the reader as out of place and in a way stilted, and must inevitably be a defect in a work of this nature. Adverse criticism of the method on which a book is founded, however, must be deeper than any mere protest against the form in which it is presented to the world; and the statistical method on which President Hall bases all his conclusions in every part of his chosen field is always open to question, at least as to the infallibility with which writers of his type of thought seems to endow it. The best we can say for statistics is that they are interesting, and that they are useful in the approximation of results, but we are not justified in relying on them for anything more than that.

A conspicuous factor in President Hall's treatment of his subject is the sympathy for youth which he shows throughout. The student of adolescence, he says in his preface, must love and feel for the young. This principle is true in every field—that there can be no understanding without sympathy—and surely it is nowhere more true than in the field of anthropology, in which we have to deal, not with abstractions, or with things of wood and stone, but with living, breathing, and feeling human beings. And of this the intending reader of President Hall's book may be confident, that no man is better able to love, feel for, and therefore understand, childhood and youth at its best, than the author of this excellent and valuable work.

Books Received

Surgical Anatomy of the Head and Neck. By John B. Deaver, M. D. Illustrated by 177 plates nearly all drawn from original dissections. 1904. 4to. 770 pages. P. Blakiston's Son and Co., Philadelphia.

The surgical Treatment of Bright's Disease. By George M. Edebohl, A. M., M. D., LL. D. 1904. 8vo. 327 pages. Frank F. Lisecki, New York.

Beauty through Hygiene. By Emma E. Walker, M. D. Illustrated. 1904. 16mo. 306 pages. A. S. Barnes and Company, New York.

Pamphlets Received

Prolonging the Productive Period. Henry A. Haigh, Teachers' Sanitary Bulletin, No. 8.

The Restriction of Diphtheria. Guy L. Kiefer, M. D., Teachers' Sanitary Bulletin, No. 6.

Twenty-Second Annual Report of the State Hospital for the Insane at Warren, Pennsylvania. Year ending November 30, 1903.

Sixty-fifth Annual Report of Columbus State Hospital. Year ending November 15, 1903.

Health of Body and Soundness of Mind. T. S. Clouston, M. D. Reprinted from "Life and Work."

A Plea for Justice to the Consumptive. S. A. Knopf, M. D. Reprinted from the Medical Record, January 2, 1904.

An Address on the Scottish Medical Corporations and the Public Weal; How they might Develop a Health Conscience. T. S. Clouston, M. D. Reprinted from the British Medical Journal, July 11, 1903.

The Prodromata of the Psychoses and their Meaning. T. S. Clouston, M. D. Reprinted from the Review of Neurology and Psychiatry, December, 1903.

Neurasthenia-Alcoholism-Insanity. William Lee Howard, M. D. Reprinted from The St. Paul Medical Journal, 1904.

Sexual Perversion in America. William Lee Howard, M. D. Reprinted from the American Journal of Dermatology and Genito-Urinary Diseases. Vol. VIII, No. 1, 1904.

Bulletin No. 91. Of the Maryland Agricultural Experiment Station. Experiments with Nitrogenous Fertilizers.

Bulletin No. 92. Notes on Apple Culture.

Bulletin No. 93. Second Report on the Pithiness of Celery.

Sixty-first Annual Report of the Utica State Hospital at Utica to the State Commission in Lunacy for the year ending September 30, 1903.

Report of the Trustees of Bellevue and Allied Hospitals for Three Months ending December 31, 1903.

Neurology in Philadelphia from 1874 to 1904, by Charles K. Mills, M. D. Reprinted from the Journal of Nervous and Mental Disease, June, 1904.

The Physiological Areas and Centers of the Cerebral Cortex of Man, with New Diagrammatic Schemes. Charles K. Mills, M. D. Reprinted from the University of Pennsylvania Medical Bulletin, May, 1904.

Un Caso Di Psicosi Uremica Con Sintomi Coreiformi. Nota clinica del Dottor Ferdinando Maggiotto.

Su La Dottrina Di Flechsig De Le Zone Percettive E Le Zone Associative. Del Prof. L. Bianchi.

Thirty-third Annual Report of the Medical Superintendent of the Middletown State Homeopathic Hospital at Middletown, N. Y., to the State Commission in Lunacy for the year ending September 30, 1903.

Contribution to the Study of the Growth of the Feeble-Minded in Height and Weight. A. R. T. Wylie, Ph. D.

Un caso di psicosi uremica con sintomi coreiformi. Del Dottor Ferdinando Maggiotto. Estratto dalla Riforma Medica, anno XX, num. 20.

Half-Yearly Summary

MARYLAND.—*Sheppard and Enoch Pratt Hospital, Towson, Md.*—There is being constructed at this hospital an extensive hydro-therapeutic plant. This will be situated in a portion of the basement of the women's building occupying nearly the entire south wing. There will be a pool $16\frac{1}{2} \times 15$ feet which will have a depth of water varying from $3\frac{1}{2}$ to 4 feet. This pool is to be lined with white tile and be surrounded by a nickel plated rail. There will be a room which will contain a control table, which will regulate the temperature of water used in the various other pieces of apparatus and the pressure of the douche. This room will also contain a shower and needle bath, an ordinary bath tub and a sitz bath. In an adjoining room there will be steam cabinets and a marble shampoo table. Both of these rooms will communicate directly with the dressing room. Adjoining these rooms will be a room devoted to massage and another room for electrical apparatus. In still another room there will be a large tub arranged for prolonged bathing according to the best method now in use. This tub will be so arranged that the water will come in through a pipe arranged around the bottom of the tub which will be supplied from a tank in which the temperature of the water can be easily regulated. There will also be a large lounging and resting room fitted up with couches and easy chairs. In addition to the rooms already described there will be rooms for towels, soiled clothing and the like. The corridor upon either side of which the rooms above described and the pool lie is of ample width, well lighted, will have a floor and base of venetian mosaic and is accessible from the women's wards by a flight of stairs and for the men from a door leading to the grounds.

During the summer the superintendent's residence on an elevation to the northwest of the hospital buildings has been completed and is now occupied by Dr. Brush and his family. The house, which is quite large and attractive, is built in the colonial style and is very comfortably arranged. It is so situated that it is within convenient distance of the hospital buildings and yet not so close as to form part of them. It is connected by telephone with the offices and wards of the hospital and with other parts of the hospital grounds.

An electric bus has been purchased by the trustees of the hospital for use in conveying visitors from the York Road entrance to the hospital buildings. Its use has been found a great convenience, the trip is made quicker than can be made by carriage and a large number of passengers can be carried.

Dr. Stewart Paton, director of the laboratory, went abroad in June, for extended study in France and Germany. He expects to be absent until the fall of 1905.

Dr. Clarence B. Farrar, one of the clinical assistants, who has been abroad since August, 1902, returned late in September, and will take up special study in physiological and experimental psychology as well as doing the laboratory work formerly conducted by Dr. Paton. The greater portion of his time was spent in Heidelberg in study under Kraepelin and Nissl.

MASSACHUSETTS.—*McLean Hospital, Waverley*.—Beginning October 1, 1904, there will be a change in the training school for women nurses.

The length of the course will be increased from two to two and a half years, more instruction will be given and the nurse will have more time for study. She will be given courses in anatomy, physiology, hygiene, bacteriology, urinalysis, hydrotherapy, electrotherapy, massage, physical exercise, the dispensing of drugs, housekeeping, cookery, general nursing, and the nursing of cases of nervous and mental disease. Instruction will be given by means of text-books, lectures and where practicable by demonstrations and actual work in the dispensary and the laboratories, as well as in the wards of the hospital.

During a half of the first school year the pupil will be given no more work on the wards than is necessary to put in practice the demonstrations received in the course of instruction,—perhaps 2 hours daily. For this time the hospital will be practically a boarding school for the pupil nurse.

The change will necessitate the employment of more nurses and will be an additional expense to the hospital, notwithstanding a reduction of \$5 in the monthly pay.

The length of the course for men nurses will continue for the present to be two years.

MICHIGAN.—*Michigan Asylum for the Insane, Kalamazoo*.—A detached hospital building for the care of acute cases among men is being erected at this asylum. It will accommodate 76 patients and 20 nurses and is designed with special reference to the care of the presumably recoverable. All cases will be admitted to this building and those found to be chronic will be transferred to other detached buildings or to the general wards of the asylum. The building is so arranged that the acute case upon admission will see but little of others and will not come in contact with the distressing conditions inseparably connected with admission to a general ward. Beside the day rooms and sleeping accommodations for the patients there is a laboratory, diet kitchen and serving rooms, rooms for hydrotherapy, massage and electric treatments. Special provision is made for the continuous observation of the markedly depressed. Provision is made for the amusement and entertainment of the convalescent patients. A small operating room is provided in which surgical attention may be given to such

cases as require it. The plan for this building is a distinct improvement over that of the hospital for women erected a few years ago. The latter has proven to be so satisfactory not only to the physicians and nurses of the asylum but to the friends of patients that it is expected even better results will follow the opening of this new building for men. The present insanity law of Michigan wisely provides for the voluntary admission to these hospitals of persons nervous but not insane. Several cases have already taken advantage of this provision of law with thus far none but pleasant experiences.

On June 30, 1904, the close of the fiscal year, there were 1571 patients under treatment and on September 27, there were 1620. Owing to this rapid growth additions to the boiler-house and coal-shed became necessary and these are about completed with the installation of two new boilers each of 150 H. P. capacity. All buildings are heated from the central plant, steam being carried about 2,000 feet to the new hospital.

The thirteenth annual session of the Asylum Training School will open on October 10, under the able supervision of Miss R. Helen Cleland, Superintendent of Nurses, formerly of the McLean Hospital.

MISSOURI.—*The Punton Sanitarium, Kansas City.*—This sanitarium is making a large addition to the building. This is necessary owing to the increased demand for the accommodation of patients. At present there is accommodation for forty patients. The present building was constructed four years ago and it was then thought to be sufficiently large for any call which might be made, but during the past year the average daily population was four and a fraction higher than for the preceding year. The building is a fireproof brick structure, equipped with all modern conveniences and medical appliances. The addition will cost five thousand dollars.

NEW YORK.—*The Long Island Home, Amityville.*—The past half-year has been a very successful and satisfactory one to the management of the Home. The number of admissions has been rather above the ordinary, as has been the daily average population. A new wing with accommodations for nine patients, two new dining-rooms and a nurses' dormitory has been added to the women's department, thus relieving the congestion incident to the increased census. This new wing is so arranged that it can be conducted in connection with the hospital ward, and so that it is possible in a large measure, to isolate the noisy or disturbed patients from those that are quiet, but who because of suicidal tendencies or for medical reasons require to be kept in the hospital ward.

—*Binghamton State Hospital, Binghamton.*—During the past year there has been in process of construction a new building for the special care of insane patients suffering from tuberculosis. This building is located on a hillside facing the south with a dense forest immediately in the rear and to some extent on each side. It is therefore protected from cold northerly and westerly winds with the maximum sun exposure. This building

will be known as Edgewood and will accommodate 100 patients. It will be occupied this fall.

As part of the general plan for increased accommodations for patients a separate residence for the Superintendent and his family is now being erected. When this building is completed the apartments now occupied by the Superintendent will be converted to the use of patients. A new dining-room will be constructed and the hall formerly used as a chapel will be available as a dormitory. About 80 patients will thus be provided for.

A new hospital building for the care of patients suffering from acute attacks of insanity will be erected at this institution soon. The state architect has the plans nearly completed and it is expected that proposals for the construction will be requested this fall. This building will accommodate 30 patients of each sex.

The hospital is now crowded far beyond its capacity. The number of patients cared for is 1415, the greatest population in its history. To relieve this crowding and to provide additional accommodations plans are in course of preparation for a new building to accommodate about 450 patients. The site for this building is on a hillside facing the south where there will be commanding views up and down the valley of the Susquehanna river.

During the past year under the Good Roads law a splendid stone road has been constructed between the main hospital plant and its outlying farm colony, a distance of nearly two miles, and at the present time a contractor is at work building a similar road between the hospital and the paved streets of the city of Binghamton, a distance of more than two miles. When this road is completed, communication between the hospital and the business center of the city by wagon or carriage will be greatly improved.

—*The Society of the New York Hospital, Bloomingdale, White Plains.*—Recently a pamphlet was issued from the Psychopathic Department of the New York Hospital, at Bloomingdale, White Plains, N. Y., giving a historic and descriptive account of the Bloomingdale Asylum as it was founded and existed in New York, and of the new institution at White Plains. This is interesting from the fact that much of it is a compilation of work done by the venerated Dr. Pliny Earle, who was in charge of Bloomingdale from 1844 to 1849. The institution as it exists at White Plains is enjoying an unusual degree of prosperity, has always been free from debt, with a surplus for improvements. It is supplementing its hydrotherapeutic treatment with salt bathing in the Long Island Sound, at a beach within easy driving distance, where the institution has a pavilion; and is also giving boat rides upon the sound in a launch, to a number of patients who are sufficiently intelligent to appreciate and be benefited by this kind of outing. The number of patients has slowly but steadily increased, there being at the present time 165 men and 180 women, a total of 345. There have been no changes in the staff since the last item in the JOURNAL.

—*Buffalo State Hospital, Buffalo.*—A Conference of the physicians of the state hospitals located in Central and Western New York was held at

the Buffalo State Hospital, May 17, 1904. Dr. Adolf Meyer, Director of the Pathological Institute of the New York State Hospitals, Ward's Island, N. Y., had charge of the program. There was an attendance of about twenty-five physicians, and the Rochester, Utica, Willard, St. Lawrence, Gowanda and Buffalo State Hospitals were represented, also the Craig Colony for Epileptics, Sonyea, N. Y. The meetings were led by Dr. Meyer and consisted of lectures, demonstrations, and free discussions, concerning clinical cases and matters of psychiatric interest.

Dr. B. Onuf, Pathologist at the Craig Colony for Epileptics, Sonyea, N. Y., gave a résumé of certain pathological work in the laboratory of the Colony during the past year, and also a description of a "Method of Securing Fixation and Hardening of the Central Nervous System before the Autopsy," since published in the *Medical Record*, July 9, 1904.

Dr. R. H. Hutchings, Superintendent of the St. Lawrence State Hospital, presented a study of the recoveries occurring during the past ten years in the St. Lawrence State Hospital, Ogdensburg, N. Y.

Dr. H. P. Frost, First Assistant Physician, Buffalo State Hospital, gave a résumé of a paper on alcoholic psychoses.

The holding of this meeting at a point distant from the Institute in New York City, was somewhat of an innovation, but it proved a success both as to attendance and interest.

An addition to the Nurses' Home for Women was completed in November, 1903, and accommodates thirty-five nurses, making the total capacity of the Nurses' Home seventy. This addition was put up at a reasonable cost, and the Home now houses all the nurses not actually required to room upon the wards as a matter of safety.

A residence for the Medical Superintendent, a residence for the Medical Staff, a chapel and amusement hall, and a home to accommodate 100 male nurses, are now being erected upon the grounds of the hospital.

—*Middletown State Homeopathic Hospital, Middletown.*—During the past year a great deal of repainting has been done both on the exterior and the interior of the institution. Much of the plumbing has been overhauled and a great deal of it has been renewed. Pavilions I and II required the most extensive overhauling. Electric fans have been installed in the infirmary wards and in the kitchen. Considerable work has been done in grading and improving the drainage about the institution.

A room in the basement of the main building has been selected as a museum where specimens of the patients' handiwork are exhibited. It is hoped that in time this collection will have a scientific value and illustrate the effects of the various mental disorders on the patients' creative abilities.

A pathological laboratory has also been fitted up in the basement of the main building.

—*Long Island State Hospital, Kings Park, Long Island.*—In June the annual demonstration of practical nursing by the training class was given.

Arrangements have been made with the Brooklyn and Long Island College Hospitals, whereby all the women graduates of the training class are enabled to take a three months' course. Special opportunities are being given them in the maternity and children's wards.

A contract has been let for new plumbing throughout the cottages, replacing the plumbing which has been in service for many years. This is a much needed improvement, as the old plumbing was wholly inadequate and entirely out of date.

Work on the Nurses' Home is progressing. When completed this building will accommodate 350 employees, and not only add much to their present comfort, but relieve the overcrowding on the wards to a considerable extent.

The installation of the Vacuum system has recently been completed.

A new safe has been placed in the Superintendent's office, for his use as superintendent and treasurer.

—*The Craig Colony for Epileptics, Sonyea.*—*Constructional Improvements.*—Work is in progress on two small cottages in the Women's Group. Each cottage has a capacity of 17 to 18 patients. These cottages are for the better class.

An addition to the Laundry is also nearing completion. When this addition is finished it is estimated that the capacity of the Colony laundry will be for 1800 to 2000 persons.

Under a recent law, the Colony is permitted to use the money it earns from the sale of its products, in maintaining and extending its industries. About \$3,000 so earned has recently been spent in the Farmstead Group in the way of sheds for cattle, manure pits, and a house 30 x 100 feet, two stories high, for farm tools and implements.

A new oven has been built in the Bakery at a cost of \$1400. Its capacity is for 2000 persons.

Two cottages for employees, each costing \$1500, are under way and should be finished early in the fall. With the completion of these, the Colony will have fourteen attractive little cottages occupied by the various heads of departments. The aim at Sonyea is to give home life so far as possible to every one.

One of the most needed improvements at the Colony—the construction of roads—is going on. \$5,000 is being expended in building a mile of stone road 14 feet wide.

The hospital is having added a new wing, 32 x 74 feet and two stories high. It will contain complete up-to-date facilities for using water in every form in the treatment of disease.

—*Manhattan State Hospital, East, Ward's Island.*—The camp for consumptives continued in operation throughout the year with a capacity of forty-four beds, thus making provision for the out-door treatment of all active cases of pulmonary tuberculosis in the hospital. The scope of the summer camps has been extended and their capacity enlarged, so that in

the current year two hundred and sixty patients have been thus provided for instead of one hundred and seventy-five as in 1903. This number who enjoyed camp life during the summer months only included bed-ridden cases from the hospital wards, aged and decrepit patients, the demented and uncleanly class, as well as a certain number of convalescent patients. The general results obtained with all the different classes of cases treated continued to be of a favorable character as regards both physical and mental improvement.

A modern operating room has been constructed for the gynecological service in the East Building. The latest model of the Kny-Scheerer sterilizer has been installed and every facility afforded for the proper treatment of such cases as require surgical interference among the women patients.

—*Manhattan State Hospital, West, Ward's Island, New York City.*— Since the issue of the summary for the half year ending March 31, 1904, the clinical work at the hospital was carried on as noted in the last summary in all departments until July 1. Owing to the greatly overcrowded condition of the hospital, the Commission in Lunacy issued instructions that from July 1 to October, commitments through Bellevue Hospital should be sent to Manhattan State Hospital, at Central Islip, L. I. This has given marked relief to the work at this institution and has enabled the medical staff to finish up a large amount of detail clinical work, which had accumulated during the past year, such as reviewing cases, revising summaries, etc.

For the past few weeks gynecological surgical work under Dr. Le Roy Broun has been suspended. As cooler weather comes on the work will be resumed. The special work mentioned in the previous summary has also been suspended to a considerable extent during the hot weather.

As heretofore Dr. Lusk continues to give attention to general surgery and responds when his services are needed. Dr. Ward A. Holden continues his work as ophthalmologist. Dr. Henry H. Whitehouse, dermatologist, resigned his position on June 21, 1904. The phthisical service has been conducted as previously noted.

The tents were erected early in the spring for the reception of acute cases, and the results in the treatment of cases in this way have been as gratifying as heretofore. Early in the spring a wooden pavilion, to accommodate twenty-five patients, was built and located near the tents. Another to accommodate thirty-five patients is being constructed at the present time. Plumbing, electric lighting and heat are being installed in these frame pavilions so that they can be used in both summer and winter.

The usual entertainments have been provided for the patients. During the summer season out-door dances and concerts were given. Appropriate exercises were held on May-day, and field sports on Decoration day, Independence day and Labor day.

From seventy-five to one hundred and twenty-five patients have been regularly detailed to the lawns and gardens during the summer season.

Excursions on the steamer "Wanderer" have been given weekly on Thursday afternoons to the women patients, and on alternate Saturday afternoons to the men patients.

Through the courtesy of the Manhattan State Hospital, East, our patients have been able to avail themselves of salt water bathing at the ponds established for such purpose.

The following general improvements are completed or are under way:

The interiors of wards 11 and 12 (phthisical wards) have been painted throughout.

Additional fire extinguishers, fire hose and other fire fighting apparatus have been purchased for the better protection of the buildings. Additional radiators have been installed in the men employees' home and also in the women employees' home.

The interior of kitchen No. 2 has been painted.

Five hundred yards of blue stone and screenings have been purchased for the roads.

Arc lights have been installed about the grounds, and are now in use.

Dredging has been done around the coal dock to allow the unloading of larger barges of coal.

The window frames, sashes and other woodwork of the women's home have been painted.

The interior of ward 13 has been painted.

A dishwasher has been purchased and installed in the annex dining room.

A cement walk from dining room No. 3, to the walk leading to dining room No. 8, at the south end of the Island is nearing completion.

A new feed pump has been installed in the power house.

A new stand pipe for fire protection has been installed in the Pathological Institute, which occupies a part of the Verplanck Building, and those in wards 18, 19 and 20 have been moved from the center to the north end of the wards. The doors in the Pathological Institute have been fire proofed, and new fire lines have been installed on the steamer "Wanderer," all for better fire protection, and for the same reason all inside doors of various wards and buildings have been changed to open outwardly.

The window guards and fire escapes of the Verplanck Building have been painted, and the window guards of the new building will be completed before October 1.

New transformers have been purchased for the Verplanck Building and are now being installed.

New floors are being laid in ward 13, and a conduit is being built under this ward for the steam pipes.

This hospital has needed a suitable amusement hall, and a hall to accommodate eight hundred people is now being erected. An addition to the Superintendent's cottage is also being erected.

A cement conduit for steam and return pipes is being built from the annex to pavilion ward 34, connecting with the intervening wards, 31, 32 and 33.

Pipe covering has been purchased for all steam and return pipes throughout the institution not already provided.

An additional pump to be used as a fire pump, to be installed in the power house, has been purchased, together with material to provide pump pressure on all water lines to buildings over two stories in height.

Two steam tables have been purchased, one for each of the wooden pavilions erected this summer.

—*Gowanda State Homeopathic Hospital, Gowanda.*—Quite extensive improvements are now under way at this hospital and at present there is being constructed a residence for the superintendent, a house for the staff, a nurses' home with accommodation for one hundred and fifty nurses, and an amusement hall. The contract price for these buildings is one hundred thousand dollars. The removal of the superintendent and staff from the administration building will give additional accommodations for about one hundred more patients.

The staff has been increased by the addition of Dr. Frederick Robbins, of Boston, as interne, and Dr. Stephen Wetmore as clinical assistant.

—*Willard State Hospital, Willard.*—The equipment of the hospital has been increased in various directions during the last half year. The quarantine station has been enlarged and painted; new plumbing has been installed and the building supplied with water and the necessary sewage connections. These improvements have long been greatly needed, and their lack has, in the past, greatly handicapped efforts to deal promptly and thoroughly with patients in quarantine. The quarantine building, which is now nearly ready for use, will accommodate twenty-five persons, if necessary, and its design and equipment make it a model building for its purpose.

The house at Vinelands has been thoroughly overhauled, enlarged, painted and furnished, and connected by a new electric light line with the electric plant. Sewage and water connections have also been made, as well as provision for heating. Much work has been done on the farm surrounding this house, in clearing the land of unnecessary brush, improving the vineyards, pruning the orchards, draining the fields and laying out a road to connect this property with the main portion of the hospital. This building, which is intended to accommodate thirty men patients who are employed in the orchards and vineyards, is now ready for occupancy. It is a very attractive and comfortable, as well as convenient, building for workers of this class.

The new plumbing at Edgemere has been completed.

A new tin-shop has been secured by re-modelling one of the old ice-houses.

The inside painting of buildings occupied by patients has been continued, and we hope to extend this to include all such buildings in the near future.

A number of new instruments has been added to the surgical equipment,

as well as a Kny-Scheerer dressing sterilizer. The facilities for operating are improving steadily, but are still not complete.

The usual number of new books has been added to the Medical Library. The medical work has continued much as formerly. During the early part of the last half-year the regular work along psychiatric lines was greatly impeded by the appearance of epidemics of measles and mumps. Erysipelas occurred with unusual frequency and severity at the same time and these diseases, as well as a few diphtheria cases, made pressing demands on the time of the staff. However, the usual medical work was carried on with unflagging interest. Staff meetings are held almost daily, and all cases admitted are written up and abstracts of them presented at these meetings. There has been a gratifying decrease in the number and frequency of diphtheria cases of late. Six mild cases have been noted since April 1. There were eight cases during the same period of 1903, and thirteen cases from October 1, 1903, to April 1, 1904. No case has occurred since July 1, 1904.

OHIO.—*The Massillon State Hospital, Massillon.*—Four additional cottages have been opened since the beginning of the year, making a total capacity for this institution of 1325.

Two more cottages are completed, and will be occupied within the month, making the capacity of the institution 1460.

The contract has been let for an additional cottage. State care in Ohio will soon become a verity.

We are installing a complete hydrotherapeutic, electrotherapeutic and vi-brassage outfit.

There have been no changes in the medical organization of the hospital.

PENNSYLVANIA.—*State Hospital for the Insane, Norristown.*—There is at present under construction in the women's department a home for the women nurses which is about half completed and it is expected that it will be ready for occupation about the first of the year.

—*An Inebriates' Law in Pennsylvania.* At the last meeting of the state legislature of Pennsylvania a law was enacted (P. L., 1903, No. 153), to "legalize the detention of habitual inebriates or drug-takers by commitment of a judge or magistrate to any proper hospital or asylum, for a period of one year unless otherwise discharged."

At the expiration of one year from the enactment of the law, an inquiry was made of various hospitals, and it was ascertained that fifteen persons had been admitted in accordance with this law in five public and private hospitals of the state. At the present date it is doubtful whether any considerable number of the fifteen are remaining in hospitals. In two institutions, concerning which some experience has been had, the magistrates have evidently used the hospitals for temporary commitment of inebriates, as they might commit a person to the reformatory, and sub-

sequently issued orders of discharge—in some cases at the end of thirty days “in order that they might have another chance.”

Two writs of *habeas corpus* were issued in the city of Philadelphia. In neither of these instances did the judges offer any opinion as to the constitutionality of the law, but rather evaded the question. In one case the judge discharged the petitioner on his promise of better behavior, and in another case, the judge on hearing the evidence decided that the welfare of the patient required a further detention in the hospital, and he was accordingly remanded there. In another reference to this law it was remarked that the law must be considered to be on trial, and the experience here cited is a contribution in that direction.

—*Joint Meetings of Commission and Hospital Officers.* During September, 1903, a society was formed, composed of the members of the Lunacy Commission, trustees and managers of hospitals for the insane, and the physician-superintendents. A meeting for organization was held at Danville State Hospital. The object of this association is the elevation of the standard of care in hospitals for the insane and their betterment, and the discussion of such professional and administrative questions as may come before the several meetings. It is the purpose to hold meetings semi-annually at the different hospitals in rotation.

TENNESSEE.—*Lyons View Hospital, Knoxville.*—An extension to the west wing of this hospital is now being erected and it is expected that it will be completed in May or June of the ensuing year. The appropriation for this work was thirty-three thousand dollars.

VIRGINIA.—*Central State Hospital, Petersburg.*—A cottage with basement and two stories, with capacity for seventy-two acute female cases, is being erected. Part of the basement of this building will be used for a dining room, special kitchen, etc., and part for a bathroom which will later on be properly equipped with modern appliances.

An attendant's home, a cottage two stories high with capacity for about seventy, is in course of construction.

Ground has been broken for a recreation hall and chapel, and for an industrial building or shop in which various kinds of indoor work by the patients will be carried on.

All these buildings are constructed of red brick and trimmed with grey granite and grey brick; the roofs will be covered with slate and the floors generally with Georgia riff-pine.

Last winter an adjacent farm of nearly one hundred acres (making the entire acreage 500) was purchased and a farm-house thereon renovated and converted into quarters for several male patients of a quiet type. A canvas tent has been added to this colony and the number of patients increased to twenty-eight. Here the population is constantly changing in order to provide a two weeks' outing for as many patients as possible.

Since the spring, canvas tents for tuberculous patients have been in use. There is a camp for male and one for female patients—in all about sixty. These tents are pitched on the slopes south of the respective male and female hospital groups.

The number of patients in the hospital has been more than eleven hundred. All the colored insane, however, of the state are cared for here. None of these unfortunates are housed in jails or poor-houses.

Three internes, representing the three medical schools of the state, have been appointed on the medical staff.

WISCONSIN.—*Milwaukee Hospital for Insane, Wauwatosa*.—During the past summer a combination curb and gutter has been laid along the new driveway from the main entrance to the front door, including the circle in front of the administration building. This drive, which is shaded on both sides by trees, will be composed of crushed stone and rolled thoroughly. A cement walk skirting this drive is being laid at present, and both together will constitute a very substantial improvement. This work was done by an employee assisted by patients and at a very low cost.

The lake and its surroundings have been greatly beautified, notably, by the erection of a rockery and waterfall on the island in the lake and by the addition of bridges of rustic design over the brook which forms the outlet of the lake.

The pavilion in the women's grove which was used for dancing as well as a shelter, was destroyed by fire in the month of July and has since been rebuilt on a larger scale. The dimensions of the present structure are 65 feet by 25 feet. A concrete floor will be laid and the pavilion will be used as a roller skating-rink as well as for dancing.

The new ice plant of twelve-ton refrigerating capacity and two-ton ice making capacity is in operation and has proven of great utility. The cold storage building is practically completed and will be put in use within a week. A 75 kilowatt generator will be installed the latter part of the present month.

WEST VIRGINIA.—*The West Virginia Asylum, Huntington*.—There have been no changes in the hospital buildings. The staff has been increased by the appointment of Dr. T. W. Moore, as consulting oculist and aurist.

IOWA.—*Clarinda State Hospital, Clarinda*.—During the last biennial session of the legislature an appropriation was made for the erection of a fireproof cottage to give accommodation for one hundred men; also for a large brick shop building wherein could be gathered together all of the various industries of the institution. An additional appropriation was made for a coal house wherein a large supply of coal could be stored. These various improvements are well under way in construction and the cottage promises not only to be handsome in appearance, but very comfortable. It will accommodate one hundred male patients whose condition is of such

a character as to profit by enlarged liberties, and who will be employed about the farm, gardens, and shops. The construction of the shop building is also well under way and its completion will be a great convenience and relief, as many of the rooms now occupied as shops are urgently needed for the accommodation of employees.

Some two years ago over 300 acres of most fertile and well located valley land was purchased for the state. Two small farm buildings have been moved together and have been entirely remodeled with the result that this institution will have a fine farm cottage which will give a home to some twenty trusty patients under the management and direction of an assistant farmer and his wife. This cottage is now nearly ready for occupancy. The colony is located a little over three-fourths of a mile from the main building of the hospital and no doubt will prove a source of much pleasure and benefit to its occupants.

Appointments, Resignations, Etc.

- ATKINSON, DR. EDWARD, formerly Assistant Physician at the Retreat for the Insane, Hartford, Conn., has resigned to enter into private practice at Niantic, Conn.
- BASCH, DR. SAMUEL H., resigned as Medical Interne at the Manhattan State Hospital, West, Ward's Island, New York.
- BREWSTER, DR. GEORGE E., formerly Junior Assistant Physician, promoted to be Assistant Physician at the Middletown State Homeopathic Hospital at Middletown, N. Y.
- BRUNK, DR. OLIVER CUREY, formerly Fourth Assistant Physician and Pathologist at the Central State Hospital at Petersburg, Virginia, promoted to be First Assistant Physician.
- CULLEN, DR. WILLIAM H., formerly Junior Physician at the Manhattan State Hospital, West, at Ward's Island, New York, appointed to the Syracuse State Institution for Feeble-Minded Children.
- DEWING, DR. O. M., transferred as Superintendent from the Long Island State Hospital at Kings Park, N. Y., to the Long Island State Hospital at Flatbush, N. Y.
- DINNICK, DR. OSWALD, resigned as Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York.
- DOUGLAS, DR. SUMNER E., appointed Medical Interne at the Manhattan State Hospital, West, Ward's Island, N. Y.
- ELLIOTT, DR. ROBERT M., transferred as Medical Superintendent from the Long Island State Hospital at Flatbush, N. Y., to the Willard State Hospital at Willard, N. Y.
- EVERETT, DR. EDWARD A., formerly Second Assistant Physician, promoted to be First Assistant Physician at the Middletown State Hospital at Middletown, N. Y.
- EWING, D. HALLIE L., formerly Assistant Physician at the Department for Women at the State Hospital for the Insane at Norristown, Pa., resigned to enter into private practice at Seattle, Washington.
- HARRIS, DR. HARRY G., appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, N. Y.
- HENRY, DR. HUGH CARTER, resigned as First Assistant Physician at the Central State Hospital, Petersburg, Virginia, to enter into private practice.
- HUMPHREYS, DR. L. W., appointed Assistant Physician at the West Virginia Asylum at Huntington, W. Va.
- JOHNSON, DR. HARRY OTIS, formerly Assistant Physician at the Eastern Hospital for the Insane at Bangor, Maine, appointed Assistant Physician at the Retreat for the Insane at Hartford, Conn.
- LIGHT, DR. S. RUDOLPH, appointed Assistant Physician to the Michigan Asylum for the Insane at Kalamazoo, Mich.
- LOCKE, DR. CHARLES F. A., resigned as Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York.
- LO GRASSO, DR. HORACE, appointed Medical Interne at the Craig Colony, Sonyea, N. Y., with special duties in the pathological laboratory.
- LOUTFIAN, DR. JOHN L., formerly Junior Assistant at the Willard State Hospital at Willard, N. Y., resigned to enter private practice.
- LYON, DR. CHARLES G., formerly Medical Interne at the Willard State Hospital, Willard, N. Y., appointed Junior Assistant Physician at the Binghamton State Hospital, Binghamton, N. Y.
- MACDONALD, DR. A. EL., Superintendent of the Manhattan State Hospital, East, resigned.
- MACY, DR. WILLIAM AUSTIN, transferred as Superintendent from the Willard State Hospital to the Long Island State Hospital at Kings Park, Long Island, N. Y.
- MACNESS, DR. F. H., Assistant Physician at the Manhattan State Hospital, Central Islip, New York, transferred to the Manhattan State Hospital, East, Ward's Island, New York.

- MEAGHER, DR. JOHN F. W., resigned as Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York.
- MITCHELL, DR. ROY E., formerly Medical Interns, promoted to be Junior Physician at the Middletown State Homeopathic Hospital at Middletown, N. Y.
- NAIRN, DR. B. ROSS, formerly Junior Physician at the Hudson River State Hospital, transferred to be Junior Physician at the Buffalo State Hospital, Buffalo, N. Y.
- PARKINSON, DR. J. M., appointed Junior Physician at the Manhattan State Hospital, East, Ward's Island, New York.
- PHILLIPS, DR. A. M., appointed Junior Physician at the Manhattan State Hospital, East, Ward's Island, New York.
- RADEMAKER, DR. ROBERT C. H., resigned as Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York.
- RANDOLPH, DR. JAMES H., appointed Clinical Assistant at the Sheppard and Enoch Pratt Hospital, Towson, Md.
- REED, DR. RALPH, formerly Clinical Assistant at the Middletown State Homeopathic Hospital at Middletown, N. Y., resigned to accept a position in a private institution for the insane.
- RICHARDS, DR. GEORGE G., appointed Assistant Physician to the Michigan Asylum for the Insane at Kalamazoo, Mich.
- ROBBINS, DR. FREDERICK, appointed Medical Interns at the Gowanda State Homeopathic Hospital, Gowanda, N. Y.
- SANFORD, DR. WALTER H., formerly Junior Physician at the Long Island State Hospital at Kings Park, N. Y., promoted to be Assistant Physician.
- SHAW, DR. WILLIAM F., appointed Medical Interns at the Manhattan State Hospital, West, Ward's Island, N. Y.
- SPENCER, DR. ELIZABETH C., appointed Assistant Physician in the Department for Women at the State Hospital for the Insane at Norristown, Pa.
- STERN, DR. ADOLPH, promoted from Medical Interns to be Junior Physician at the Long Island State Hospital at Kings Park, N. Y.
- TALBOT, DR. ROBERT SLAUGHTER, Third Assistant Physician at the Central State Hospital at Petersburg, Virginia, has been granted leave to take a post-graduate course in New York.
- TERMAINE, DR. A. M., formerly Women's Physician at the Craig Colony at Sonoma, N. Y., has resigned and gone abroad for two years' study.
- WASHBURN, DR. JOHN L., appointed Junior Physician at the Manhattan State Hospital, West, Ward's Island, N. Y.
- WETMORE, DR. STEPHEN, appointed Clinical Assistant at the Gowanda State Homeopathic Hospital at Gowanda, N. Y.
- WHITNEY, DR. LEE A., formerly Medical Interns at the Buffalo State Hospital, Buffalo, N. Y., transferred to be Resident House Surgeon at the New York State Hospital for the Care of Crippled and Deformed Children at Tarrytown, N. Y.
- WILLIAMS, DR. BRYAN G., formerly Assistant Physician at the Long Island State Hospital at Kings Park, N. Y., died May 13, 1904.
- WILLIAMSON, DR. A. P., recently in private practice in Minneapolis, appointed Medical Superintendent of the Southern California Hospital for the Insane at Patton, near Redlands, California.
- WILSON, DR. W. H., formerly Assistant Physician at the West Virginia Asylum at Huntington, W. Va., resigned.
- WOODMAN, DR. ROBERT C., formerly Second Assistant Physician, promoted to be First Assistant Physician at the Middletown State Homeopathic Hospital at Middletown, N. Y.
- WOOLLEY, DR. HERBERT C., appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, N. Y.
- WASHBURN, DR. P. C., appointed Junior Physician at the Manhattan State Hospital, East, Ward's Island, New York.



DR. H. E. ALLISON

AMERICAN JOURNAL OF PSYCHIARY

FIFTY YEARS IN

BY JOHN B. CLARK

MR. CHAIRMAN AND FRIENDS:—I have just been consulted about the date or the place of my birth—his days—whether they shall be so long as to be prolonged. It is another proof of the law much in the natural ordering of things, of the relations and endings of the life of man, which shall be brought into being.

Four years ago, when an intimation was given to take some notice of the term of my life, postponement was asked, if any such serious intention were carried out, until the completion of a period of fifty years in a hospital for the insane.

If such an event is to be considered creditable and a commemorative occasion, it should be remembered in connection that it could only be so in a position of honor to realize the fact—through a commemorative occasion, through the dangers under whom I have survived, through the privilege to enjoy. In the course of office, these benefits are not to be denied that is a protest against the degenerating influences of the changes due to caprice, and the changes due to the hypothesis that the changes are for improvement.

At a dinner given to the
in 1904, to celebrate the completion of
the



DR. H. E. ALLISON

AMERICAN JOURNAL OF INSANITY

FIFTY YEARS IN PSYCHIATRY.¹

By JOHN B. CHAPIN, M. D., LL. D.

MR. CHAIRMAN AND FRIENDS: It is a trite saying that no one is consulted about the date or the place of birth, nor the number of his days—whether they shall be short, or by a kindly Providence be prolonged. It is another proverbial utterance that it is as much in the natural ordering of things that there shall be limitations and endings of the life of man, or of his activities, as that he shall be brought into being.

Four years ago, when an intimation was given out that a desire existed to take some notice of the term of my hospital service, a postponement was asked, if any such serious intention was to be carried out, until the completion of a period of fifty years of duty in a hospital for the insane.

If such an event is to be considered creditable and worthy of this commemorative occasion, then it should be remembered in this connection that it could only have been possible—and I would emphasize the fact—through a conservative policy of the boards of managers under whom I have served, whose confidence it has been my privilege to enjoy. In giving a physician a reasonably secure tenure of office, these boards have established a most creditable precedent that is a protest against changes due to the corroding and degenerating influences of medical or State politics, or against changes due to capriciousness, or those schemes that are promoted on the hypothesis that change is necessarily an element of reform or improvement.

¹ Remarks at a dinner given to Dr. John B. Chapin, Philadelphia, December 1, 1904, to celebrate the completion of half a century in hospitals for the insane.

Whatever may have been in mind four years ago, the predestined years have come and gone, yet happily have been the means of bringing together this company of friends on the occasion of an anniversary observance of great personal interest. For myself, it can be stated that my appearance here is unintentional, that I had no "imperative conception," no "irresistible impulse" to execute, nor a single grievance that would justify the infliction of any remarks on an occasion like the present. If innocently and unconsciously on my part a precedent shall now be established, it is one that in the mutability of affairs can hardly be expected to be frequently repeated.

Some here present have laid aside their usual duties, and others at a sacrifice of precious time and convenience have journeyed here at the bidding of your committee of invitation. You have stood by me in former days, and though years have elapsed, we are standing together again. The first impulse of my heart, its normal reflex action, is to thank you, my friends, for your gracious reception and for the kind words that have been spoken by your chairman. Who could be insensible to the homage you have done by this spontaneous gathering? Who could be unmoved at the approach of a period of life when its activities and its very existence have their limitations, and the shadows are lengthening and "even the grasshopper shall be a burden," that an assembly of chosen friends should meet to brighten by their words of cheer the way during all the days that remain? Words are inadequate, and but faintly express the emotions that are uppermost in the human breast on an occasion like the present, which will be cherished while sense and memory remain. Already there are obligations incurred which if good resolutions prevail, and the gift of persistence continues, shall be surely cancelled. As I have looked upon the roll of octogenarians, nonagenarians, and even centenarians who make up my ancestral tree—a most serious aspect of one's inheritance to contemplate—I may surely promise that if not present with you when you have reached the half-century mark of your active life, I shall be with you in spirit if not in the body.

It is to seek a far-away date, to go back fifty years in one's life. In October, 1854, a general hospital service of four years in the New York Hospital, with interruptions of brief duration to attend

the college lecture courses, had just been completed. The New York Hospital, now on Sixteenth Street, was then located on Broadway at the head of Pearl Street, one mile below Bleeker Street and about one mile from the Battery, where young physicians of that day hoped to live before they died. The medical and surgical service of the New York Hospital of that day was large, active and varied, and to a young physician just entering upon the practice of his profession was one of greatest attraction and professional interest. During the period between 1850 and 1854, the ships from England were crowded with starving Irish emigrants—thousands of whom, stricken with infectious typhus fever, were received into the Immigration Hospital sheds on Ward's Island, the Staten Island Quarantine Hospital, the New York Hospital, and Bellevue Hospital, in the city of New York. On the walls of the College of Physicians and Surgeons there are recorded the names of fourteen young physicians—residents in the several hospitals—who perished of this fever contracted in the performance of their professional attendance upon these wretched and, in so many instances, unknown persons. Many of these young men were my associates and friends, possessed of all the aspirations and ambitions that belong to early manhood. The tablet that bears their names has inscribed upon it a commemorative phrase, "*Haec Mea Ornamenta Sunt.*" The fast-sailing clippers from the far east under an arrangement with the United States Government, brought many sailors and others to the hospital with obscure forms of malarial disease, and the semi-monthly California steamers contributed hundreds of cases sick with what was then called "Chagres" and "Panama fever," of the greatest interest—obscure then and at the present day.

According to the annual report of the New York Hospital for 1854, the last year of the prevalence of typhus fever, seventy-seven cases of that disease were treated, thirty-four cases of Asiatic cholera, and five cases of yellow fever—forms of disease now seldom or never observed by physicians in this latitude. Pneumonia was not then so dreaded or fatal as at the present period, as eighty-three per cent were discharged recovered in the same year. On the other hand, diphtheria and appendicitis, then unknown or not generally recognized, in these latter days have enabled the physician and surgeon to display the splendid triumphs of science and skill in saving human life.

Even at that day, like the early glimmerings of dawn before the day, there was some crude theorizing about the nature of contagion and the communicability of disease. Some wards of the hospital were closed, and some corners of wards were recognized as so highly infected as to be fatal to the successive occupants of the beds. With a view to the destruction of the contagion, whatever was its nature, it is remembered that the walls were treated to a wash containing an excess of sulphurous acid, the principal and only result of which was to produce a dark blue-black shade of a very depressing and suggestive funereal character. In this connection may be recalled the theory of Prof. John K. Mitchell, of this city, of the supposed agency of cryptogamous plants in the production of marsh malarial diseases, which he was in the habit of presenting to his classes, not as a part of his course, but as indulging in his liberty of theorizing. In the absence of a laboratory with its modern equipment, there was, however, much zeal in the study of pathology as revealed in post-mortem examinations. It was the rule of the hospital that permission to make post-mortem examinations should be granted by friends of the patient, but when there were no friends, the superintendent was empowered to permit them. One of the chiefs of the medical division, my preceptor, Dr. Swett, when on duty first entered the office of the superintendent to make inquiries if any deaths had occurred and whether there were any friends of the deceased. If there was no objection made, the doctor, with his staff of three, at once entered upon his pathological work. Sometimes there was more zeal than pathology, and it was said of Dr. Swett that after witnessing one of Forrest's delineations of the tragical end of one of his villains in the Broadway Theatre, probably in an absent-minded moment, he rose in the audience to ask if the deceased had any friends.

A general hospital experience and familiarity with its executive administration was at that day as good a preparation for service in a hospital for the insane as it would be at the present day. The transfer from the wards of a general hospital to the medical care of two hundred and fifty patients in the State Lunatic Hospital at Utica, in 1854, was, however, a new and novel experience. To the novelty of the new office was added the then pleasurable sensation of receiving one dollar and thirty-seven cents for every

day's duty, including Sundays, which modest sum the State fixed as a suitable compensation for an assistant physician. It was a new experience to render a medical service to patients who were physically able to walk about the wards, to perform in many cases manual labor and other things properly, yet whose chief infirmity consisted of such disorder of the mind as to render them to a degree non-viable in an organized community. As the new experiences and novelty wore away, there came the strange sensation, which has probably come to others here present, of confronting the medical aspects and problems of abnormal and disordered operations of the human mind, as well as the sociological questions that relate to the care of the insane. The truism and conviction, trite as it may be, may be expressed in this connection, that as all of the duties pertaining to the various offices about a hospital might be performed indefinitely in a perfunctory manner, yet he who would hope to succeed in his chosen work, who would aim in a higher sense to perform in a magnanimous manner his professional obligations to his day and generation, as they may come to him, should not fail to acquire in addition to his medical equipment a knowledge of every detail of hospital administration, with the confident assurance and hope that the valuable experience he has obtained will soon or late be in demand.

The period of four years at the Utica State Hospital seems now to have been a preparation for another work in the establishment of Brigham Hall, a hospital for the insane, in association with the late Dr. George Cook. It can now be stated that it is believed this was the first institution incorporated as a *hospital for the insane* in New York or in any State of our country, the usual designation then being an "asylum" or "lunatic asylum." A service of ten years in this connection furnished the opportunity of study and actual preparation of broader plans for another field which were destined to change and revolutionize the lunacy system of New York State, and perhaps plans in other States.

The number of State and incorporated hospitals for the insane in 1854 did not exceed twenty-seven. There had been but little practical experience with plans on this side of the Atlantic. Physicians of an earlier period were accustomed to go abroad to acquire that knowledge of their profession which could not be

obtained at home. The hospitals and many institutions of Paris largely resorted to, were then under the influence of religious orders. It was quite natural that their monastic residences should have suggested the quadrangular-planned structures for the asylums for the insane which were at first closely followed in America. Examples of these structures were to be seen at Worcester, Mass.; Columbus, Ohio; Utica, N. Y., and elsewhere.³

The AMERICAN JOURNAL OF INSANITY was commenced in 1844 by Dr. Amariah Brigham. It was the first journal and organ of the specialty devoted to insanity in our country. The completed series now forms the most valuable repository of the history, periodical literature, and of contributions devoted to insanity, that we possess. Its publication was continued after the death of Dr. Brigham, the editorial duties being assumed by the medical officers of the Utica State Hospital, who thus received a special training, the indirect results of which have been shown by their accomplished successors, who performed the self-imposed work for a period of forty-four years, until its responsible care was undertaken by the Council of the American Medico-Psychological Association. In this galaxy or group I would place Drs. Gray, Blumer, Andrews, and your chairman, Dr. Brush, together with others.

The advantages to be derived from conferences and associated co-operation were early appreciated by those engaged in a similar field of work, and led to the formation in 1844 of the Association of Physicians and Superintendents of Hospitals for the Insane. It is a notable circumstance, as the statement is assumed to be correct, that this was the first national medical organization formed in America. The formal meeting for organization was held in Jones' Hotel in the city of Philadelphia. (Who in this company can now recall the location of that hotel?) On the evening before the meeting a preliminary conference was held

³ The Pennsylvania Hospital has made provision for the insane since its opening in 1751, and since 1841, in its separate buildings in West Philadelphia. The Friends' Asylum was opened in 1817. Virginia erected a State asylum in 1773. South Carolina in 1827. The Ohio State Asylum was opened in 1836, Worcester Asylum in 1832, and the State Asylum at Utica in 1843. Pennsylvania made no public provision for the insane until 1850.

in the house on the grounds of the Pennsylvania Hospital for the Insane occupied by the physician, Dr. Kirkbride. The meeting was attended by thirteen physicians. It has seemed that their presence there has left a blessing upon the house with its hallowed associations. It has seemed that their spirits may have possibly continued to abide there and may still commune together to guide and inspire the occupants of the venerable mansion. It has been counted among the precious privileges that have been mine, to have personally met and known nine of the thirteen founders of the association, and to have derived valuable lessons of duty and service from them. The memory of the life-work of the founders, their high sense of public and private duty, their devotion to the interests of the insane, their aspirations, their direct influence upon legislation affecting the welfare of the insane in all of the States, have produced almost a fetish-like reverence for those immortals whose high ideals are the type of greatest manhood for all time.

Following the creation of the association of hospital physicians in 1844, the study of insanity received a marked impulse, and a special department of medical practice began to be outlined until it was recognized as a distinct specialty or department. What has been accomplished in this country in accordance with the principles of that association has been done within the brief period of sixty years—fifty of which spent in various professional relations in hospitals devoted to their care you now commemorate. At the close of a term of service which is beyond the usual average duration of professional and official activities, the question has often recurred, as it may have come to others as years elapsed, whether life has been worth living? Whether by means of it any contribution has been made that has worked to the welfare of humanity? Whether any contribution has been made toward the solution of the many problems of our specialty that yet remain obscure, and which may so continue forever? Whether barriers that have long hindered progress have been lowered so that any advance can be made, or whether life was but to come by a manifestation of an inscrutable force, and after its little activities were expended then to be annihilated and to leave no trace behind? While much might be expected at the expiration of fifty years of hospital life among the insane, the record is at last about made

up, and we might be permitted to rest in silence, yet it might be fair to let the party who is now arraigned here in the company of his friends present in his own way a side of his own case, even at the risk of some personal allusions and of recalling some familiar history. A statement is recalled, in this connection, which might be a sufficient precedent to follow, made to me by the late Colonel Alexander Biddle, a manager of the Pennsylvania Hospital, who commanded a brigade which held an important position on the field at Gettysburg. At the close of the engagement, as he stated, he was directed to make a report. He sat for some time before his blank sheets and then simply wrote in the few words I am now using that he proceeded to the points to which he had been ordered, where he remained with his command until the close of the battle. He added in comment and conversation that he had read so many versions of this critical battle that he had since almost concluded that he had not been a participant. In this terse report we would read the summing up of many a life-work that records a victory in the simple and quiet performance of duty as it has come, and as responsibilities have been assumed and discharged to the extent that endowments have been bestowed.

In 1854, there was one State hospital in New York. It was not compulsory but optional with a public officer to commit the insane poor to that institution, or to an almshouse. A limited number only were received, and if recovery did not take place, they were transferred to the county almshouse. The poorhouse also received recent cases and by constant accretions it grew and became entrenched because the public conscience was not aroused and was silent under a system that placed a questionable economy ahead of a sense of public duty. The county poorhouse was a primitive organization which gave shelter under the same roof and management to the aged, the infirm, the respectable and depraved poor, orphans, infants, the insane, idiots, the dissolute degenerate class, and others who were dependents from any cause. Can any one look upon the great, overcrowded, congested almshouse and hospital of our own city without observing right here in our midst, that saving the splendid service which is rendered by physicians and surgeons, we have an institution that may be a study of the primitive almshouse, on a somewhat enlarged scale, of the early days of this and other States? Who has ever contemplated

any of these abodes of wretchedness without mingled feelings of civic shame, indignation and sympathy?

It is no matter of surprise that in 1854, and for ten years succeeding, the betterment of the care of the insane poor in New York State was a dominant problem in the minds of physicians and persons benevolently inclined when the public conscience was once fairly awakened, for there were as many then in chains in the poorhouses of that State as when Pinel removed the iron restraints at the Salpêtrière in 1792.

It may be a pardonable divergence to state a bit of history which is not generally known, or if known, not often recalled; that in the winter of 1865, the New York State Agricultural College, located at what is now called the hamlet of Willard, was in a condition of collapse and hopelessly insolvent. The president was the provost marshal-general of the Army of the Potomac. The students had long deserted the so-called college, going across fields in 1861 in their haste to swell the ranks of the army. There was a grant of land from the public domain of generous proportions then awaiting designation by the State government, that might be claimed by the insolvent college in accordance with the intent of Congress. It was an intentional coincidence, perhaps, that two bills were introduced into the Legislature of 1865, that eventually became laws, making progress with equal steps to their final passage. One of the bills contemplated the creation of an asylum for the chronic insane to be located on the Agricultural College farm, if it were found a suitable site by a commission of three to be named by the Governor, of which I was made a member. The other bill was an act to create a university to bear the name of the founder, Ezra Cornell, who promised an endowment, considered liberal in that day, provided the land-grant named above might be diverted and become an addition to the proposed gift. The Senate of that day had among its members three men—Hon. Charles J. Folger, Hon. Andrew D. White and Hon. Ezra Cornell—who constituted by their influence and endowments of civic virtue a triumvirate capable of controlling and directing legislation into wise channels. To their powerful influence the State of New York and the whole country are indebted mainly for the beneficial results that were to flow from their united support—the creation of the Willard State Hospital and the Cornell Uni-

versity. If there has been one act performed in my life attended with a sense of thankfulness, it is to have been permitted to insert in the Willard law principles that have been recognized as the policy of that State in the care of its insane; principles which declared for the transfer of the insane from county poorhouses to the newly-created institution, made it mandatory to send all recent cases to a hospital, and that extended the mantle of State care, protection and responsible supervision, over the insane, that the common law furnishes orphans, infants and persons helpless from any cause. In the light of subsequent events it can be asserted, without a fear of question or contradiction, that the passage of the Willard law and its subsequent administration were the initial steps that eventually destroyed forever the poor-house system for the care of the insane, and rendered possible the present comprehensive system of State care in New York that has taken its place.

If it was esteemed a privilege to make a successful stand for principles, there followed the greater opportunity as a commissioner of making plans which were destined to have a far-reaching influence in revolutionizing existing methods. The plans contemplated the segregation of patients in supplemental blocks and groups rather than in great congregate structures. How far the general discussion of these plans influenced hospital construction and aided the solution of problems of construction of buildings for other purposes, others can and may bear their testimony, but it is asserted the great scheme of placing 22,000 insane persons under State care in New York could not have been accomplished without supplementing the main hospital structures with blocks and detached groups for purposes of economy of construction and increased classification. There was no exception to the general rule that radical departures and innovations upon existing usages will not be accepted without discussion and protest. The controversies of that day about the plans of the Willard State Hospital were exceedingly acute, to use a modern expression, and it may also be stated that similar diversity of views was held concerning the creation of the Cornell University. Of the number of those who were contestants, few now survive, the contentions that then existed have ceased, are forgotten or unknown. Whoever may perchance stand upon the divide between the lakes Cayuga and Seneca in that beautiful region of New York, and

descend the gentle slopes that lead to the shores of Lake Seneca will to-day see a magnificent estate of more than one thousand acres, upon which has been erected a well-equipped hospital and colony providing for more than 2200 insane persons, or if one shall stand upon the campus of Cornell University overlooking the city of Ithaca, the long stretch of water of Lake Cayuga and the adjoining landscape, and behold the great plant providing for a student community of nearly 4000 that has been created there by the founder under the guiding hand of its first president, Andrew D. White, he will experience emotions of thankfulness, gratitude and amazement at the mighty moral and physical power it is destined to exercise, the extent of which cannot be estimated. Both of these measures, sustaining at one period the relation of twinship as to date and interdependence, have been carried forward to accomplish the ends for which they were designed.

In 1883, an invitation was received from the managers of the Pennsylvania Hospital to accept the office made vacant by the death of Dr. Kirkbride in December of that year. He who would then have sought the office which had been filled by one (to use the language of another) whose saintly life had been spent in uplifting those who were stricken with the most serious affliction that can come to man, must have accounted himself worthy to follow in the footsteps of such a predecessor. This I could not assume to do in all things. There was also to be considered on my part a sense of duty to continue to direct and carry forward and not desert a work which had been auspiciously begun in a place where already the roots had struck deep. The confidences and relations that existed with the Willard board were of the most agreeable nature, and a change involved a chance that I might in a new field fall short of the expectations of the board of managers and friends of the hospital, to whom I was personally a stranger. During this period of doubt and hesitation about the wisdom of any change, letters of declination intended to be final were twice written at considerable intervals, but it began to be apparent that beside the many good gifts this board was known to possess, there was to be added that of persistence, likened to the "perseverance of the saints," so that a new light at length appeared, and the one whom it is your pleasure to honor this evening completed twenty years of service on the first day of September last.

Possibly there were, and have been since, disappointments—the hopes and aspirations of some were not realized, but in the final selection I had no part. If there is true virtue in the genealogical tree (and whether it was consulted I do not know), it might have disclosed that we all go back to the time when the ark was on Mount Ararat when there were some chaps out, and one *chap-in* who was saved from the great inundation to found a new generation.

It will always be counted among the most valued privileges of my professional life to have had a part in co-operating with the great work and philanthropic purposes of the managers of the Pennsylvania Hospital. During a service of twenty years in the Department for the Insane, 3503 patients have been admitted, 1290 of which number have been discharged recovered or so much improved that they gradually were completely restored to health. During this period there has been a gradual but marked reduction in the average duration of hospital treatment and residence of those discharged recovered. During the last half of the period named, the reduction amounted to an average of eight weeks—a result only to be ascribed to better methods of treatment and nursing. There is also a business side to the administration of a hospital in which a board of managers always manifests a lively and vital interest. The receipts of the last financial year of the Department for the Insane showed an excess over the first year of my service of \$54,246.01. It is not to be understood that this sum stood as a money profit, but it has enabled the managers to enlarge the scope of their benevolences to the extent of between \$50,000 and \$60,000 annually for several years, in the partial or free support of many worthy patients, and no portion of the board money has been carried to the invested capital account—a practical application of charity, of the extent of which, without the aid of a dollar of public money, few in this community have any knowledge or even conception.

The whole number of insane persons who have been under my immediate care and charge has exceeded 8100, and the number observed in other hospitals may be reckoned as many more thousands. The whole number of those discharged as recovered, or so improved that they could reside at their homes, has reached 2110.

On this festal occasion—one that marks a jubilee period—a look backward seems to embrace but a brief span, probably from the fact that the days and years have been fully occupied. While the best part of a lifetime has been expended literally in a service for others, in contemplation of and in dealing with mental and physical distress, yet it has been a work of great personal and professional interest in a field quite unexplored, as well as rich in its clinical opportunities. But there has been another side attended with grave responsibilities, thankless service, vexations, perplexities, worries, and often a consciousness that a hospital will not automatically operate itself. In this connection it may not be out of place to state that there comes a realization that hospital life is passed in a certain sense in the public gaze, and, as it were, that we live in a glass house into which any one may shy a shot; that for every one hundred patients, three hundred persons at least outside of the hospital are personally interested in their welfare; that a State lunacy board exists to watch the watchers and do other things in addition to what is imposed by a board of managers; that a lunacy law stands on the statute books that discriminates, and impedes the admission of a patient at the door of your hospital, until he is adjudged or certified to be a lunatic, although a patient unconscious and in a delirium of disease may be hurried—none too soon—to a general hospital in an ambulance in response to a telephone call; a law, some parts of which seem inspired by ill-founded suspicions that existed in a past age; that prescribes pains and penalties, even to a lodgment in a county jail, lest some one of the millions of our people may be illegally incarcerated on “a charge of insanity;” that it is an instance of legislation founded in part on fears and assumed responsibilities rather than warranted by any actual conditions or happenings, as no cases have been produced of illegal hospital detention, the result of conspiracy, and if any errors of judgment have been made, the instances where the decisions of courts are frequently reversed go to show that human judgment is not infallible and may err even in high places. I may add that in my experience in four hospitals I have not known of one attempt to place a person in a hospital actuated by a criminal intent, and obviously no hospital officer could for a moment afford to be a party to such a transaction and criminal injustice. I should further add that the admin-

istration of the lunacy law in this State at the present time is remarkably free from friction, and is furnishing the hospitals and their officers helpful moral support instead of contributing anything to discredit and discourage them by sensational reports and investigations. From these and perhaps other causes and conditions, however, service in a hospital for the insane does not seem to have special attraction to young physicians about to enter upon a professional life. In twenty years I recall but two applications received from physicians who had had general hospital training and experience, and this in a medical center graduating several hundred annually. The cause of this indifference to an important department of medical practice is worthy of serious consideration.

We turn from the pessimistic thoughts of conditions and experiences incident perhaps to all professions and occupations to a brighter side of our work. Andrew D. White, in his "History of the Warfare of Science with Theology,"¹ (not Christianity) refers to the care and treatment of the insane as "the final struggle and victory of science." He states that "the first humane impulse of any considerable importance in this field seems to have been aroused in America in 1751, when certain members of the Society of Friends founded a small hospital in Pennsylvania." They declared it was intended "as a good work acceptable to God." In 1792, forty-one years afterwards, Pinel in Paris and Tuke in York "simply put in practice the theory that lunacy is the result of bodily disease." "The final struggle and victory of science" was the elimination of diabolism, demoniacal possession, witchery, theological speculation and obsession, as these supposed conditions related to the insane, and their transfer to the humane care of institutions in charge of physicians. From Pinel and Tuke to the present day a century of work for the insane has been done by physicians. Of the fifty years of my personal experience and observation in hospitals for the insane, I may be permitted to refer briefly to some of the advances in their care and treatment. The use of mechanical restraint, which at one period I have heard even commended and extolled as a

¹"History of the Warfare of Science with Theology in Christendom." Vol. II, p. 124, *et seq.*

form of protection, has been wholly abolished or reduced to a minimum—a result that I once hardly thought probable in my day, yet it has been rendered possible by increasing the number of nurses and their training for better service. Plans of hospitals have been modified so as to improve classification, to secure individualization and segregation, rather than congregation. Labor, occupation and diversions have been encouraged, all of which appeal to the mind through the cognizance of the senses, have a tendency to break up abnormal and disorderly habits, and re-establish normal ways of living. Examples of evolution and marked changes from former plans of hospitals to secure these objects may be seen at Willard, Kankakee, Toledo, Medfield, Waverley, the new hospital proposed by the Insanity Board of Massachusetts, not to name the many State hospitals that have added supplemental structures. It will hardly be presumed that any public or corporate hospital will hereafter be erected following the great congregate plans of the middle of the last century. The term "hospital" has taken the place of "asylum," and the tendency is to give prominence to the medical administration.

In addition to what is called the moral treatment of insanity, which includes separation from business and sometimes home, change of environment and whatever may enter into the life of a hospital patient, medical treatment is recognized as essential to the restoration of fully sixty per cent of the recoverable class. The excessive blood-letting which was practiced abroad in the treatment of fever and other diseases, Rush and others introduced in the management of acute cases of insanity in America, and this practice prevailed as the principal reliance for one-half a century. It cannot, however, be said to have been introduced into the hospitals for the insane, yet I can recall that cases were frequently brought to the State Hospital at Utica that had previously been so depleted that it was a common observation that incurable dementia rapidly succeeded the acute symptoms, or convalescence was greatly retarded. The practice of depletion gave way to an opposite one of support, tonics and generous living. Narcotic drugs were at one time a constant dependence. By their use some good results may have followed, but a great deal more of mischief has been done by their misuse. Seemingly it required fifty years to learn what should not be done in

these cases. Attention is called to these erroneous methods of medical practice in the treatment of the insane which prevailed for a long period to emphasize two of the noted and most important advances in the diagnosis and treatment of mental and nervous diseases based upon the sure foundation of clinical experience and observation, which were made during the past century. In 1866, Dr. E. H. Van Deusen, then physician of the Michigan State Hospital, published, in a supplement to his annual report, "Observations on a Form of Nervous Prostration (Neurasthenia) Culminating in Insanity," which are as sound to-day as when presented thirty-eight years ago. Still later, in 1875, Dr. S. Weir Mitchell proposed a rational method for the treatment of neurasthenic conditions, the value of which has been recognized throughout the medical world, the principles of which have done much to revolutionize medical practice in incipient cases of insanity, and saved many persons a journey to a hospital for the insane. On this occasion, and in this connection, we should name with honor Dr. Edward Cowles, who has published to the medical world his studies of the relation of neurasthenia to insanity, and the mechanism of insanity, who was the pioneer to establish in this country a laboratory for the study of insanity by scientific methods. The hopes and longings of science must not as yet be mistaken for the realization of actual results.

While it has been given to some to have been gifted with a further insight into unsolved and mysterious problems that have confronted the profession of every age, we would not withhold the meed of praise which belongs to all those physicians who have preceded and are of this generation, who have consecrated themselves to the service of the insane. We may further ask the question at this point whether professional talent and scientific methods, however brilliant they may be, are the only requisites of a physician for the medical care of the insane? Should not intelligent and rational sympathy for human distress be also an essential part of his equipment? Should it be forgotten that the first efforts to improve the condition of the insane had their suggestion from humane sentiments which have been a transmitted benevolence to this and succeeding generations? Of what value would be the knowledge that a nurse might possess of anatomy, physiology and chemistry, that was not conjoined to a sympathetic

touch with the patient? Should not the same rule prevail in estimating the fitness of a physician for a hospital for the insane? Some might even estimate the qualities of the heart to be of as great value as scientific attainments, or it might be a better expression to state that both qualities are essential. Whence comes the sentimental emotion implanted in the human breast that prompts practical sympathy toward our fellow-men in their distress? In the painting which the great master, Benjamin West, presented to the Pennsylvania Hospital, he chose for his subject "Christ Healing the Sick," and among the subjects upon whom He exercised His divine power and sympathy "was a man who had his dwelling in the tombs; and no man could any more bind him, no not with a chain . . . and no man had strength to tame him." It would seem that the painter may have intended to present on his canvas his conception of the mission of the Saviour of mankind. He may have hoped to inculcate in the mind of the beholder one of the great practical lessons drawn from the mission, the example, the precepts of the Divine Master of us all, which has been paraphrased by another in the words, "*that they serve God well, who serve his creatures;*" to imply that the command of our Lord, "Follow thou Me," remains with His people to-day as when it was delivered unto men.

Did time permit, we would present in contrast some of the advances in hospital plans and administration that have been made in the past fifty years; note some of the changes of sentiment toward the insane and their care; acknowledge the great contributions to our knowledge of nervous diseases that students of neurology have furnished; forecast the hospital of the future with all of its possibilities; and in anticipation look ahead to mingle our congratulations with those who will come after us when the last possible and attainable secret of nature shall be revealed. May it be given to one sitting about this board to actually explore the inmost recesses of that temple which is the repository of the human mind.

On this occasion, Mr. Chairman and friends, when your allotment of time is measured by minutes, I fear I have already exceeded the portion assigned to me, and strained your powers of endurance.

An expression of thanks seems but a feeble return for the

extraordinary honor you have done me on this occasion. Rather at the end of life when all earthly labors have ceased, do we speak kindly words of a departed friend or associate, but in the midst of the activities that attend the busy life little is usually noted of those who stand beside us in our daily work. You have summoned me to your presence to receive your congratulations and to emphasize the completion of fifty years of hospital service. Such an event excites emotions not unlike to those that a soldier may be supposed to experience when he is called to step from his ranks to receive some token of approval. It is not for me to seem to approve or deserve this recognition. It has come equally unexpected and as a surprise; nevertheless, it is the more grateful to myself and to my family because your assemblage here would seem to mark your valued approval of a life-work of duty performed as strength and wisdom have been granted—a result more highly to be prized than much riches.

The years will still come and go—the leaves of autumn will fall—but long after all of this company have passed away, the children and the children's children will still recall the traditions of this commemorative occasion, and your names will be held in grateful remembrance.

CALCIFICATION OF THE FINER CEREBRAL VESSELS, WITH REMARKS UPON ITS CLINICAL SIGNIFICANCE.¹

BY PROFESSOR A. PICK, *Prague.*

TRANSLATED FROM THE AUTHOR'S MANUSCRIPT BY FRANK R. SMITH, M. D.

Although in quite recent years two articles have appeared, which deal with the process concerned in the non-atheromatous calcification of the smaller cerebral vessels—some instances of which have already been noted in young people—and in which its influence upon the circulation has been considered, nevertheless the whole question, more particularly so far as the finer points are concerned, is still far from being completely settled. For this reason it is my intention in the present paper to publish fuller details of the results of investigations which I presented somewhat at length, together with microscopical preparations, as long ago as April, 1894, before a meeting of my colleagues. The only really new points deal with the discussion of the calcification of the elastic fibers in the muscularis and the calcospherites. It is true that I had already observed these in 1894, but I freely confess that at that time I had not understood their significance, and for this reason the study remained unfinished until just lately. I make this statement here not on account of any question of priority—for this may be regarded as settled by the facts reported in this paper—but rather to prove the independence of my work. Furthermore, this communication seems to be justifiable on the grounds that I am in a position to report not only the autopsy findings in the cases, but also the histories of patients who died while under treatment in my clinic, and thus contribute something to our knowledge concerning the relation between the former and the latter.

The old idea was that vessels affected by calcification were converted into rigid tubes, and that the circulatory changes in

¹ See the preliminary note in *Neurolog. Centralblatt*, 1902, July 1.

them were brought about by the consequent loss of elasticity and narrowing of the lumen. A few authors mention the total obliteration of the lumen, which they seem to have assumed was caused by accumulation of the lime particles. Thus, Wedl² noted in many places lime particles of a considerable size filling up the lumen so completely as to stop the circulation in the rigid vessels. The drawing accompanying his article, and representing a sagittal section, makes it seem improbable that he was dealing with an observation similar to that to be described in the present paper.

Hubrich³ concluded, from the presence of small foci of softening around the calcified vessels, that obliteration had taken place, but nowhere do we find it definitely stated whether or not he attributed it to the calcification. Besides others, he gives a picture of a vessel which he expressly says is pervious.

Finally, Klebs⁴ speaks of complete obstruction of the vessel lumen.

Rindfleisch⁵ says that calcification of the media can come on as an independent disease, and that here we have to deal with a simple petrification. The muscle fibers become impregnated with lime and can be brought into view again if the lime salts are dissolved by means of acids. In another place,⁶ however, he says that in the chalk particles, besides the lime salts, there must be a ground substance.

Later, Mallory⁷ not only demonstrated the closure of the vessels, but also studied, more closely than had been done before, the processes concerned in their calcification. This part of the subject had only been dealt with superficially by previous investigators, who had also lacked the proper methods for accomplishing the work satisfactorily. Thus the following remarkable statements were made by Wedl:⁸ "In considering the calcification in the vessels, we are brought back to the question: What part

² Wedl: Wiener Akad. Sitz.-ber., XLVIII, p. 389.

³ Hubrich: Ztschr. f. Biologie, II.

⁴ Klebs: Allg. Pathologie, 1889, II, p. 249.

⁵ Rindfleisch: Lehrb. d. Path. Gewebelehre, 1886, VI, Aufl., p. 221.

⁶ Rindfleisch: Loc. cit., p. 53.

⁷ Mallory: Jour. Path. and Bact., III, p. 110.

⁸ Wedl: Loc. cit., p. 390.

do the cells of the vessel-wall play in the deposition of lime salts in it? Or in other words, are the cells the constant producers of the lime accumulations, and are the latter deposited in the cells themselves? The fact that in my investigations the lime salts which I found in the muscularis of the smaller arteries were always in very fine particles, warrants the conclusion that the organic muscle fibers have a share in the deposition of the lime salts; but whether the latter are deposited in the cells themselves, I could not feel certain, inasmuch as I did not succeed in finding cells with still demonstrable particles and beginning lime precipitation. Analogous cases of calcified cells, however, render such a view quite probable."

With regard to the coarse and quartz-like deposits, which are more prominent in the adventitia, Wedl^{*} is inclined to doubt their origin from cells, inasmuch as we often meet with a formation of "lime-quartz" lying free, *i. e.*, without any connection with a cell.

Klebs,¹¹ who in a remarkable way has urged the syphilitic basis of the affection, says that the lime salts not only fill the tissue, but also through apposition in the vessel-wall, bring about a thickening of its layers. The first deposit of lime in the tissues favors the crystallization of fresh masses, as happens in the case of renal calculi.

Mallory¹² sums up the results of his findings somewhat as follows: "So far as the arteries are concerned, the calcification always begins in the media, spreads to the adventitia and not rarely also to the lumen, gradually closing it. In place of the lime salts, after decalcification, is found a colloid substance. In the earliest stages the drops of this colloid appear to be partly in the muscle substance and also to invade the nucleus. From the fact that the colloid spreads out and comes together to form irregular masses, it must be concluded that the change goes on also between the cells. With the advance of the process the muscularis vanishes; in the adventitia appear small drops of colloid which flow together; even in the arteries, showing the most extensive degree of calcification, remnants of the adventitia

^{*} Wedl: Loc. cit.

¹¹ Klebs: Loc. cit.

¹² Mallory: Loc. cit.

are still visible. In the interior of the vessel the colloid is arranged irregularly or in the form of a ring and gradually closes the lumen; so long as the vessel remains pervious, the endothelium seems to be intact. In the præcapillaries and capillaries the colloid appears in the form of fine drops in the wall, without being connected with the cells. In the veins it is much less abundant, and usually appears in the form of drops in the media or in the inner sheath of the adventitia."

Hansemann¹³ in general confirms Mallory's views with respect to the calcification, but says further: "Nevertheless the colloid which remains is certainly less in amount than the lime which was there before, so that one cannot say that the lime has been deposited solely in vessels which were formerly colloid. In one specimen, in which at first numerous capillaries were found, is seen after extensive decalcification very little colloid; moreover, the individual larger lime particles are not all joined with the colloid. The steps of the colloid metamorphosis proceed hand in hand, so that I am not prepared to say that the colloid metamorphosis is to be regarded as a fore-stage of the calcification. Moreover, it is difficult to decide whether areas of colloid metamorphosis exist without calcification, inasmuch as both substances are very similar in appearance and give almost precisely the same staining reactions."

Returning now to my own observations, I should like to preface my remarks by saying that the additional facts which have been derived from them have been obtained mainly by the use of a new method devised by Herr Reisek. This innovation consisted in first preparing paraffin-series of non-decalcified vessels. It is true that this procedure was somewhat ruinous to the knife employed, but, as will be seen later, by means of it we were able to establish many facts previously unknown and to confirm others. Next, the isolated vessels were drawn under low power and after being decalcified—not always perfectly—and stained, an abundance of serial sections was made from them. In this way it was possible to obtain a better idea of the processes concerned in calcification, the various points being especially well brought out in the sagittal sections. I would say here that my communication

¹³ Hansemann: *Verhandl. d. deutsch. path. Gesellsch.*, 1900, II, pp. 402 *et seq.*

does not deal with the calcification in the capillaries, since my findings in this connection brought to light nothing new.

So far as concerns the form of the vessels in cross-sections, it was almost always preserved, even in the presence of advanced calcification which had led to obliteration of the lumen. Only one series from a non-decalcified vessel was found, in which, apparently as a result of the process, a kind of shrinking had taken place. Similar pictures of decalcified vessels are most probably to be explained by the shrinking effects of the fluids employed.

Specimens of cross-sections from calcified vessels, in which the process of calcification was far advanced or even complete, presented a homogeneous smooth surface, showing bands and somewhat resembling that of an agate, in which at times, when the section had been perfectly made, not even a crack could be discerned (Fig. 1).

As regards the adventitia, in connection with the calcification of the vessels, this coat may be regarded as the "*ultimum moriens*." Fig. 3 shows clearly that even in the presence of total obliteration the adventitia of the vessel is still intact. The fact that it was not seen in certain sections of the series, of course does not prove that it had not been present. In all the specimens the fact already pointed out, that the process begins in the muscularis, is clearly demonstrable. This was evident in the figures which showed the process beginning in this situation, whereas in others, which corresponded to the later stages, the intensity of the calcification in the muscularis is especially noticeable (Figs. 4, 5, 6, 8). It is strikingly evident that in this situation the lime accumulation forms a homogeneous, thick ring which at times, apparently owing to the way in which the section has been cut, is cracked concentrically or in radial directions; while centrally from it short bands composed of lime particles are visible. This appearance in all probability signifies that the process has a centripetal direction even within the muscularis, and the supposition is confirmed beyond all doubt by a series of figures (Nos. 22-28) in which its course can be followed with the eye. Again, how it affects the elements of the muscularis is shown in Figs. 22, 23, 24, 25. An examination of Figs. 22 and 25 can hardly leave any doubt that in the first stages the deposition takes place between

the muscle cells, which together with their nuclei appear intact in both sagittal and cross-sections. Evidence in support of this is furnished by Fig. 10, which is taken from a non-decalcified series and shows very beautifully, in the interstices between the separated muscle cells, the corresponding arrangement of the lime particles in fusiform bands. It is true that in the non-decalcified sections histological proof of the existence of muscle cells between the lime bands is lacking, but the arrangement of the latter corresponds exactly with the situation of the former.

With regard to the nature of the substance between the muscle cells which first undergoes colloid degeneration and then calcification, we must fall back on the elastic fibers of the cerebral arteries described by Triepel,²² and although this condition of the vessels was not closely examined into in my observations made in 1893, nevertheless, if some of the accompanying figures (for example Figs. 22, 25, 27, 28), showing the wave-like arrangement of the aggregations of colloid or those of lime in the muscularis, be compared with Triepel's illustrations, one cannot doubt for a moment their perfect agreement, and as a result must conclude that the elastic fibers of the media are the first to become calcified. Of course, however, it cannot be said for certain that some colloid or lime may not simply have collected in the interstices between the muscle cells.

In the calcification of the elastic fibers there would seem to be an additional stage in which, probably as a result of pressure exerted by the particles making up the lime bands, the muscle cells are destroyed and themselves undergo calcareous impregnation. In favor of this view are pictures (for examples, Figs. 23, 28) in which the muscle cells lying between the lime bands no longer show a normal configuration of their nuclei. Whether this is a sign of a colloid degeneration preceding the calcification of the muscle cells could not be determined, but the supposition is at least not improbable.

On the other hand, pictures, such as Fig. 24, prove that the nuclei of the muscle cells persist, for some time at least, after calcareous impregnation, although it is questionable whether they are intact. This is in keeping with the distinction laid down by

²² Triepel: Anat. Hefte, 1897.

von Recklinghausen¹⁴ between ossification and calcification, namely, that in the latter, after extraction of the lime salts, the former structure of the tissue can readily be recognized. In the present case, however, this does not always hold good, as Figs. 11 and 12 show. In these cases one might have to employ Cohnheim's¹⁵ interpretation, namely, that the muscle elements, nevertheless, undergo marked disturbances as a result of the colloid degeneration preceding the calcification.

In connection with the process that precedes the total obstruction of the vessels by calcification, Figs. 4, 7 and 8, taken from a non-decalcified vessel, will be found very instructive. Although the muscularis is seen to be already calcified, one finds more internally a proliferation of lightly striated tissue almost completely closing the lumen, on the inner side of which endothelial cells or nuclei can be seen. That this appearance owes its origin to an accidental partial decalcification caused by the preserving fluid, is negatived by the fact that in the same series complete closure of the vessel due to calcification can be found. Under these circumstances, the only explanation left would be that at times the proliferation of the intima—for this is undoubtedly present—has preceded by a long time the calcification. The arrangement is for the most part absolutely concentric, but occasionally it appears to be somewhat irregular, and in the latter case the narrowed lumen lies a little excentrically.

At times enclosed in the proliferation are seen larger or smaller granules which stain with hæmatoxylin. These are evidently colloid balls, which are the forerunners of a calcification which comes on later (see Figs. 13 to 21).

Histologically, this finding corresponds to what Löwenfeld¹⁶ in his cases considered to be a proliferation of the intima. Another point of similarity is the fact that in our specimens, as well as in his, it is not always possible to determine how much belongs to the thickening of the intima and how much to the muscularis. From a general pathological standpoint this process of proliferation of the intima corresponds to a peculiar condition which sug-

¹⁴ Von Recklinghausen: Handb. d. allg. Path., p. 393.

¹⁵ Cohnheim: Vorlesungen, p. 523.

¹⁶ Löwenfeld: Studien üb. d. Aetiologie u. Pathog. d. spontan. Hirnblutung, 1886, p. 44.

gests the dictum laid down by Thoma,¹⁷ according to which every retardation of the circulation, not compensated for by a contraction of the media, tends to bring about a growth of connective tissue in the intima, which by narrowing the lumen of the vessels re-establishes the normal rate of the blood current. This law, formulated by Thoma for various forms of vascular disease, apparently receives confirmation from the present findings. Here also there is certainly a slowing of the blood current due to calcification of the media; and to compensate for this there occurs the proliferation of the intima, as described by Thoma. The argument that, if this were the case, the finding would have been observed more frequently, falls to the ground, in so far as the older investigators are concerned, inasmuch as the methods then employed for the examination of decalcified vessels would naturally have concealed it.

In the present series of observations this finding, it must be confessed, is somewhat rare, but the sections of calcified vessels are not so abundant as to prevent one from assuming that in most cases the calcification has already invaded the compensatory proliferation of the intima.

Furthermore one more objection is to be considered. It might be thought that possibly in a portion of a vessel elsewhere completely calcified, the decalcifying effect of the preservative fluid is first exerted from the lumen of the vessel, and in this way brings about an apparent proliferation of the intima. This possibility seems to be excluded by the results obtained with partially decalcified series, since it was found that the decalcification was observed first on the outside of the vessels, so that in the case of such vessels, a thick ring of calcification is surrounded from within and without by a non-calcified layer (Fig. 9).

Of especial interest are the findings represented in Figs. 29, 30, 31. On looking at the peculiar bodies which appear in the decalcified and stained specimens as large, dark nuclei, surrounded by a homogeneous space, one can hardly interpret these as cells, first because nowhere else in the neighborhood are cells of such form found, and secondly, because a glance at Fig. 29 shows that these bodies are sometimes closely united together and form large

¹⁷Thoma: Virchow's Archiv, CXII, p. 11.

masses. In favor of this interpretation also speaks the Fig. 2 taken from a non-decalcified vessel.

For these reasons one is obliged to think of some sort of inorganic formation, and it seems to me that I am not mistaken in classing them with the so-called calcospherites, as Hartung first demonstrated them experimentally by the introduction of lime salts into organic fluids, and according to von Nathusius, also into the blood. Optical proof of the similarity cannot be adduced in the decalcified and stained specimens, but from a morphological standpoint this is supplied by the drawings of von Nathusius²⁸ and Pettit.²⁹ Moreover, this fact also seems to be proved by Fig. 31, which represents a part of a cross-section from a non-decalcified vessel. In my opinion this hardly allows of any doubt as to its proper interpretation.

The objection, that heretofore similar formations have never been found in calcified vessels, can hardly be considered applicable, inasmuch as the present method of investigation had never been previously used. Moreover, another point has to be considered in connection with the situation of these bodies, which are regarded by me as calcospherites. Even in my specimens they are not very numerous, being discovered only in four series; indeed, one gets the impression that they are only found constantly in places in which total obliteration of the vessel has taken place, or in what may be termed "dead areas," in sections of vessels still open sufficiently to permit the circulation of the plasma but hardly of the blood corpuscles, near the points of obliteration.

I think one is warranted in assuming that the calcospherites can be formed in places in which the lime salts are suspended in what might be termed the stagnating blood plasma; whereas in those in which the circulation is more active, the flow of the blood hinders their formation. This view would also be in harmony with Hartung's experimental demonstrations. Finally, in closing the discussion on this point, it should be noted that Pettit²⁹

²⁸ Von Nathusius: Untersuchung üb. Hartung'sche Körperchen. Ztschr. f. wissensch. Zoologie, 1890, XLIX.

²⁹ Pettit: Sur le rôle des calcospherites dans la calcification à l'état pathologique, Arch. d'anat. microscop., I, p. 107.

³⁰ Pettit: Loc. cit., p. 119.

describes the calcospherites from a bone-tumor in a human being, and refers to apparently analogous formations reported by other authors.

The presence of the structures here described suggests another possibility. In contradistinction to the mode just mentioned in which the vascular obliteration was caused by calcareous impregnation of the proliferated intima, these figures, to which reference was made above, together with others, as for example Fig. 2, suggests another idea, which has already been promulgated by older authors, viz., that this obliteration can also be brought about in another way—by the aggregation or fusing together of the calcospherites. This finding suggests that mentioned by Arnold,²¹ in his publication on the calcification of vessels in psammomata. For the petrification of the vessel-walls and the consequent obliteration of the lumen—which occurs in the main in the way just described—Arnold suggests another origin. He points out that in many cases the contents of the lumen of the artery are manifestly changed and that these are invaded by the process. In favor of this view is the obliteration caused by spherical bodies and plugs, the vessel-wall itself taking only a very small part in the process. So far as the nature of the obliteration is concerned, Arnold does not draw any definite conclusions from his findings, but only assumes that the plug originates either by the fusion of the lime particles to form spherical bodies, these again becoming homogeneous plugs, or else by calcification of thrombi produced by the stasis. The present findings appear to me to throw light on these evidently analogous processes, and I believe that in both the calcospherites are concerned in bringing about the obliteration of the vessels.

Before leaving the anatomical examination I wish it to be expressly understood that where I have spoken of colloid degenerations, I have used the term strictly in the sense in which von Recklinghausen employs it, and without any regard to the differentiations made by other authors. The method of examination employed evidently offered no opportunity for formulating such a distinction; at the same time, I have but little doubt that, by individual staining of the series, it might be possible to settle not

²¹ Arnold: Virchow's Archiv, LII, pp. 451 *et seq.*

only this question, but also many others which have not been dealt with in this present investigation.

After having considered the histological studies I shall now proceed to give the clinical histories of the cases from which the material was obtained.

CASE I.—A young man, 24 years of age, single, farm-hand, was brought to my clinic on December 19, 1891, with the following history:

Family and Personal History.—His father and mother are living and healthy, but seem possessed of a markedly thievish instinct, particularly the former, who spends most of his time in jail. There is no history of nervous disease in the family. The birth of the patient was normal, and as a child he was never sick. On one occasion he fell into a cellar, but did not hurt himself at all. He was always a good boy; attended school only for a little while, but is supposed to have learned to read and write. From the age of 10 years he worked on a farm. His first epileptic attack, the date of which is not obtainable, is supposed to have been due to a fright caused by a horse snuffling at him when he was expecting nothing of the kind. The next occurred after an interval of two years. From that time on the attacks had been noted more frequently, especially in the last four years. Associated with them were periods of confusion or excitement, on account of which he was sent to the asylum. Large doses of the bromides had apparently been without any beneficial effect, and it may be said here that this also proved to be the case during his stay in the hospital.

When he appeared before me for examination, the patient's face wore a silly smile. He answered only the simplest questions about himself and even these very imperfectly; at other times his sole answer was a silly laugh. His dullness was very striking, and at first was regarded as the result of previous seizures. On the next day he was considerably more lively, told about the conscription²² in his village, and still more about his own illness. He said he was almost always sick; that before the attacks he experienced a peculiar sensation of weakness and then lost conscious-

²² The departure of the conscripts to join the army would be regarded as a great event in a small village. (Trans.)

ness; that afterwards a foolishness came over him; that at nights he bit his tongue. His intelligence seemed to be of a higher grade than his dullness of the day before had led us to expect; he could count, say his prayers, and knew the ten commandments.

Status Somaticus.—A small but strongly-built man of moderate musculature. The skull is brachycephalic, very broad; the long diameter is 18.5 cm., the greatest transverse diameter being 15 cm. On each side, over the temples, there is a marked prominence. The face is asymmetrical; the median line is convex toward the right. The ears are large and projecting, but of normal configuration. Three centimeters above the root of the nose, which forms a saddle-shaped depression, there is a transverse linear scar 3 cm. long. The pupils are equal, and react normally. On the left eye there is a defect. The tongue is protruded straight and is not tremulous. The regions of the facial nerves on both sides are alike; there is no tremor. The chest and abdominal organs appear to be normal. The patellar reflexes are very weak; the skin and cremaster reflexes are normal. Sensation, so far as tests were possible, is normal.

With respect to Kleb's assumption that premature calcification of the arteries is associated with syphilis, it may be said that nothing was found in this case which would support this theory.

After this time the patient suffered from frequent attacks, some of which were associated with periods of apprehension. Especially worthy of note was the pronounced degree of dullness even at times when no convulsive seizures had preceded. These periods only rarely alternated with others in which he showed some slight intelligence. In addition there supervened a profound somnolence, which varied only to a slight extent during the visit and at meal times. Moreover, it was noticed that, as soon as he attempted to stand, the patient would sway backward or to one side. The possible existence of a brain tumor was considered, and after this had been excluded with a fair amount of certainty by a negative ophthalmoscopic examination, it was thought that the condition might be due to cerebral pressure from hydrocephalus, probably associated with partial nathsynostoses.

Despite the fact that no increased frequency of the attacks was noted, these manifestations became progressively more pronounced. Towards the end of March it was noted that on the

slightest touch the hair of the patient would fall out in tufts, although no morbid change in the scalp could be detected.

On April 2, the patient being in a condition which may be described as sopor, there appeared a marked mechanical irritability of the facial, radial and peroneal nerves on both sides. On April 5, with the patient still in the same benumbed condition, Trousseau's phenomenon was noted on the right side, while on the following day it could be elicited on both sides in the upper extremities. Not only was the position of the fingers characteristic, but also the bending of the elbow joint and the strong adduction of the upper arm. The lower extremities did not give Trousseau's sign. When it was tested for, the patient gave vent to inarticulate mutterings and made movements of defense. On April 9 the same manifestations were present; the patellar and plantar reflexes were absent; the muscular irritability was above normal. At night the patient had an attack of severe dyspnoea, followed by coma; the entire musculature took on a rigidity; the superficial veins were much distended; there was oedema of the lungs. The exhibition of camphor and apomorphine produced a remission. On the morning of April 10 the same symptoms were noted; at 8.30 a. m. clonic convulsive movements appeared in both facial regions and in the upper extremities, and were followed by death.

The *autopsy* was performed the next day in the pathological institute of Professor Chiari. Besides oedema of the lungs the following important observations were noted: The calvarium measures 53 cm. in circumference; it is remarkably thick; the sutures persist. The brain with the pia weighs 1465 grms.; it is of normal configuration but swollen and somewhat oedematous. In Pitres' sections made through the hemispheres from the white matter, numerous very fine grain-like points seem to project; they probably represent blood-vessels. Macroscopically, the larger cerebral vessels are not altered. In the cerebellum is found marked calcification (proved by chemical tests) of the smaller vessels. The cord is normal.

More careful scrutiny shows that in the cerebrum only the branches going directly to the brain from the basal vessels, and especially those supplying the medullary substance, are implicated in the process, whereas the other vessels of the cerebrum after numerous test sections, proved to be quite unaffected. In

the cerebellum, although the white matter more particularly is implicated, the cortex has not altogether escaped the process. Its extent in the cerebrum can be appreciated from the fact that hardly a single vessel branch has entirely escaped, while the majority show a very intense degree of calcification. Most frequently implicated were the arterioles, and in places also the capillaries. The veins have all escaped; the basal arteries are also unaffected.

Even on superficial examination of the vessel stems, when drawn from the brain substance, it was frequently noted that the lumen of one or other branch appeared to gradually become narrowed, until it finally disappeared. This appearance led to the examination, the results of which have already been described.

Turning now to the clinical manifestations and endeavoring to connect them, if possible, with the pathological-anatomical findings, the first question that suggests itself is: Have we to deal with tetany? Even in the absence of more accurate observations, which were impossible, I do not hesitate to answer this question in the affirmative, inasmuch as the cardinal symptoms were definitely present, and the association of epilepsy with tetanus, as is well known, is by no means a rare observation. Moreover, the evidently myotonic disturbances are of interest. To the connection of these with tetany in adults quite recently von Voss²² has drawn attention, whereas Hochsinger has made similar observations for children.

In considering the other clinical manifestations especial interest attaches to the profound sopor of the patient, which, as has been said, made us think of the possible existence of a brain tumor. It is worthy of note that this manifestation coincides with that which Heubner was the first to discuss fully, in connection with luetic affections of the cerebral vessels; and its presence warrants the conjecture that here also the widespread vascular degeneration might possibly be the cause. Certainly we have to remember that the narrowing of the cortical blood-channels formed the basis of Heubner's work, whereas here the medullary vessels of the cerebrum—except so far as regards the quality of the product which has brought about the narrowing—have been submitted to

²² Von Voss: *Monatsschr. f. Psych. u. Neurol.*, 1901, VIII.

the same disturbance. Moreover, upon the fact that the somnolence and the epileptic attacks are related to it, I shall not dwell here, more particularly since Hochhaus²⁴ has lately pointed out the connection between premature arteriosclerosis of the cerebral vessels and epilepsy.

But in view of the similarity that we have noted in the effects of the narrowing or obliteration of the vessels, whether produced by syphilis or calcification, the question arises: How can we explain the absence in our case of the foci of softening so frequently observed in luetic vascular affections? It is impossible not to conclude that the more gradual establishment of the narrowing, as a result of calcification, must be regarded as the ultimate difference. In favor of the view that in this case the narrowing is brought about much more slowly, what has been said above about the compensatory proliferation of the intima affords strong evidence.

Finally, it is impossible to avoid the question: How far can the tetany observed in this case be connected with the changes observed in the vessels? In my report upon this case made in 1894, I was inclined to assume the existence of such a relation and will here repeat the views expressed at that time:

"It is *a priori* evident that any attempts to establish a positive basis for a theory, which would explain tetany, must start from those cases in which tetany has appeared merely as a symptom, in association with other grave disorders of the nervous system; we must assume that the changes, which form the basis of these nervous disorders and which are demonstrable by our present methods, either by some peculiar modification of their localized or other conditions or by increased changes, lead to tetany, and therefore can throw light on those findings which form the basis of a simple, functional, non-complicated, curable tetany. It is true that at present such observations—at least any that are sufficiently far-reaching—are not at hand, and in this case of ours there is room for much caution."

In connection with the foregoing opinions must be mentioned a case that came to autopsy in my clinic in 1894.

²⁴ Hochhaus: Neurol. Centralbl., 1898, p. 1020.

CASE II.—Theresa F., 42 years of age, a working woman, was sent to my clinic from the eye department on account of abnormal psychical manifestations. On October 11, 1892, she had been operated upon for double cataract formation, presumably a sequela of some febrile process. After recovery the sight of each eye was $14\frac{1}{8}$ D. On March 30, she again applied for admission to the eye clinic, complaining that she could see nothing. The general objective examination, as well as that of the eyes, convinced my colleague (then Prof. Sattler, now at Leipsic) that her complaints had a purely psychical basis, especially as the woman gave evidence of a profound depression.

On admission to my clinic the patient was very much depressed. She answered slowly and with difficulty, but correctly. She was despondent over her failing eyesight, and complained that the rest of her body was out of order. She said she felt in her blood a peculiar gnawing—"from cold"—which caused her a great deal of pain and prevented her from sleeping. She claimed that her eyesight had been failing for only a few weeks but that already she could see absolutely nothing. Nevertheless, she always looked in the direction of objects which were pointed out to her and was able to go about the room without apparently feeling her way. Most of the time she sat in a corner centered upon herself, and without taking any interest in her surroundings. When addressed, however, she would at once start to complain. So far as the general physical condition was concerned, the absence of paresis and the normal condition of sensation were noted. Examination of the eyes showed that with —14 D she could see a finger at a distance of at least 4 meters; with —18 D she could distinguish small objects, such as coins, when held close to her. The knee-jerk on the right side was very weak; on the left side it was easily elicited. Romberg's symptom was not present.

As time went on the depression continued, and with it her lamentations seemed to increase. When told to go anywhere, she would refuse to do so, alleging as a reason that she could not see. On the other hand, things which offered a good deal of difficulty she often did without knocking against the furniture. Again, a key laid in front of her she would not see, but when a piece of bread was put in its place, she would pick it up immediately.

Another test of sensation was made on May 2, because the patient complained that her left leg was dead. The prick of a needle was not felt from the inguinal fold to the ankle, thence downward only faintly, and on the right leg not at all. Despite many efforts on our part, more delicate tests for sensation were not feasible. Hypalgesia also was noted on the arms and face.

Further examination of the patient, who had previously stated that she suffered from convulsive seizures, showed well-marked signs of tetany. Merely a light tap on the trunk of the facial nerve on either side elicited a very definite and strong contraction. Tapping of its individual branches produced similar results. Striking of the median on the right side or the right or left radial produced contraction of the flexor muscles. The reflex as well as the mechanical irritability of the muscles was much increased, on the arms as well as the chest. Tapping of the peronæus gave a very lively reaction. The knee-jerks could not be elicited. At our former examination for this sign great difficulty had been experienced on account of the stupidity of the patient, who stiffened instead of relaxing her muscles, but on this occasion complete relaxation was apparently obtained. When pressure was exerted over the art. brach. dext. the patient immediately complained of pain and said, "Now the attacks are coming," and in point of fact the position of the finger characteristic for tetany was assumed and the patient writhed with pain.

The electrical examination showed no increased irritability either for the faradic or for the galvanic current, not even in the region of the ulnar nerve.

For a time the manifestations of tetany disappeared, but on May 18 she had an attack in which she became unconscious, and clonic twitchings appeared in the upper extremities. On May 25, the patellar reflexes again reappeared. In July the patient passed through an attack of facial erysipelas. In September the facialis-phenomenon and increased mechanical irritability of the arm muscles were noted. In October another attack of tetany occurred without spontaneous twitchings. At the same time she suffered from intense pain in the chest, cedema of the lungs, exudations into the pleural sacs and abdominal cavity, with cyanosis. Albumin appeared in the urine. All these symptoms gradually disappeared after the cessation of the tetany.

On March 13, 1894, another attack occurred, accompanied by the same symptoms as before; on this occasion there were no spontaneous convulsive movements. On April 19, an intense cyanosis came on suddenly; the pulse became irregular in rhythm; a few râles were heard over the base of the right lung. The temperature was 38.5° C. On April 20, dullness was made out over the base of the right lung; the temperature was 39.5° ; the cyanosis increased and death ensued.

At *autopsy* nothing abnormal was found in the central nervous system with the exception of calcified small vessels which appeared on the cut surface of the cerebrum and cerebellum. They were not so readily noticeable as in the former case, neither did so many of them protrude like thorns from the cut surface. Cur-sory examination showed a fairly extensive calcification of the medium-sized and finer vessels, but also of the capillaries, which, however, seemed to be partly of a different type from that described above.

This communication seems to add material support to the theory mentioned above concerning the basis of tetany, inasmuch as it is probably no mere chance that in both cases the somewhat rare calcification of the finer cerebral vessels forms the harmonizing finding.

After the lapse of eight years, it will still be agreed that the argument depending upon the second finding seems to bear with it no small amount of weight, which is materially increased by the fact that in numerous—several hundred—autopsies in my clinic it has not again been encountered. At the present time I still hold these observations to be important, despite the fact that, on the other hand, no one else has as yet demonstrated anything in the brain bearing upon the origin of tetany. This opinion holds good, however, only provided that my prefatory remarks devoted to the question of its relation are borne in mind—that is, that the calcification of the vessels in itself is not to be regarded as the pathological basis of tetany.²

In conclusion, I would say that in the spinal cord of the first patient nothing was found which was thought to be in any way related to tetany.

² See Schlesinger: Neurol. Centralbl., 1892, F. 66.

DESCRIPTION OF FIGURES.

FIGS. 1 to 10 and 29 to 31 represent sections from non-decalcified vessels; the others are from decalcified vessels.

FIG. 1.—A calcified artery almost obliterated; unstained; ($\frac{1}{2}$ Hartnack).

FIG. 2.—Extensive calcification of the vessel wall; unstained; ($\frac{1}{2}$ Hartnack).

FIG. 3.—Extensive calcification; the adventitia is present; stained with methylene blue; ($\frac{3}{8}$ Reichert).

FIG. 4.—Advanced calcification with proliferation of the intima; unstained; ($\frac{1}{2}$ Reichert).

FIG. 5.—The middle portion of the lime deposit is becoming homogeneous; lime granules are visible outside and inside; unstained; ($\frac{3}{8}$ Reichert).

FIG. 6.—Lime bands, still partly consisting of lime particles, gradually becoming homogeneous; unstained; ($\frac{3}{8}$ Reichert).

FIG. 7.—Between the bands formed of lime particles, the ground tissue with its nuclei is visible; methylene blue; ($\frac{3}{8}$ Reichert).

FIG. 8.—Marked calcification of the muscularis; marked proliferation of the intima; unstained; ($\frac{3}{8}$ Reichert).

FIG. 9.—A markedly calcified vessel, only partially decalcified; hæmatoxylin; ($\frac{3}{8}$ Reichert).

FIG. 10.—A partly transverse, partly oblique section of a decalcified vessel. The band-like arrangement of the colloid substance is shown in places forming compact bands. In places between them nuclei of muscle cells are visible. Methylene blue and eosin; ($\frac{3}{8}$ Reichert).

FIGS. 11 and 12.—Advanced calcification; vessels decalcified. In the tissue in Fig. 11 no nuclei are seen; in Fig. 12 some are visible. Cochenille; ($\frac{3}{8}$ Reichert).

FIGS. 13 to 21.—Series of a calcified vessel; in places the lumen is completely closed; hæmatoxylin; (4c Zeiss).

FIGS. 22 to 28.—Arrangement of the colloid ground substance, previously calcified, in the interstices between the muscle fibers, some of which can be made out by the nuclei. These interstices correspond in places exactly in shape with the elastic fibers. Fig. 22. Cochenille; (Reichert, Comp. Oc. 4, obj. Achrom. 3 mm.).

FIG. 23.—Methylene blue and eosin; ($\frac{1}{2}$ Reichert).

FIG. 24.—Methylene blue; ($\frac{1}{2}$ Reichert).

FIG. 25.—Cochenille; (Reichert, Comp. Oc. 4, Obj. apoch. 3 mm.).

FIG. 26.—Cochenille; ($\frac{1}{2}$ Reichert).

FIG. 27.—Hæmatoxylin; ($\frac{1}{2}$ Reichert).

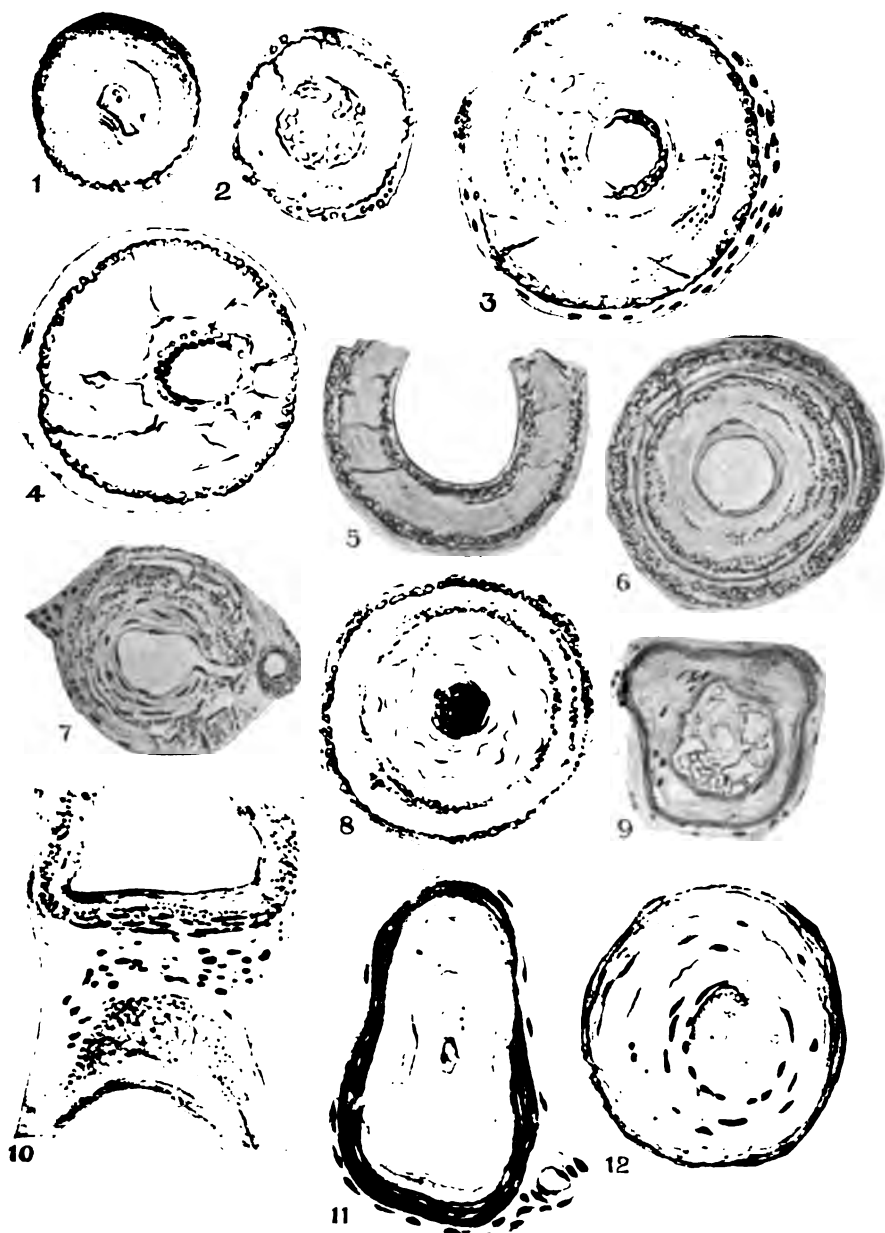
FIG. 28.—Methylene blue and eosin; ($\frac{1}{2}$ Reichert).

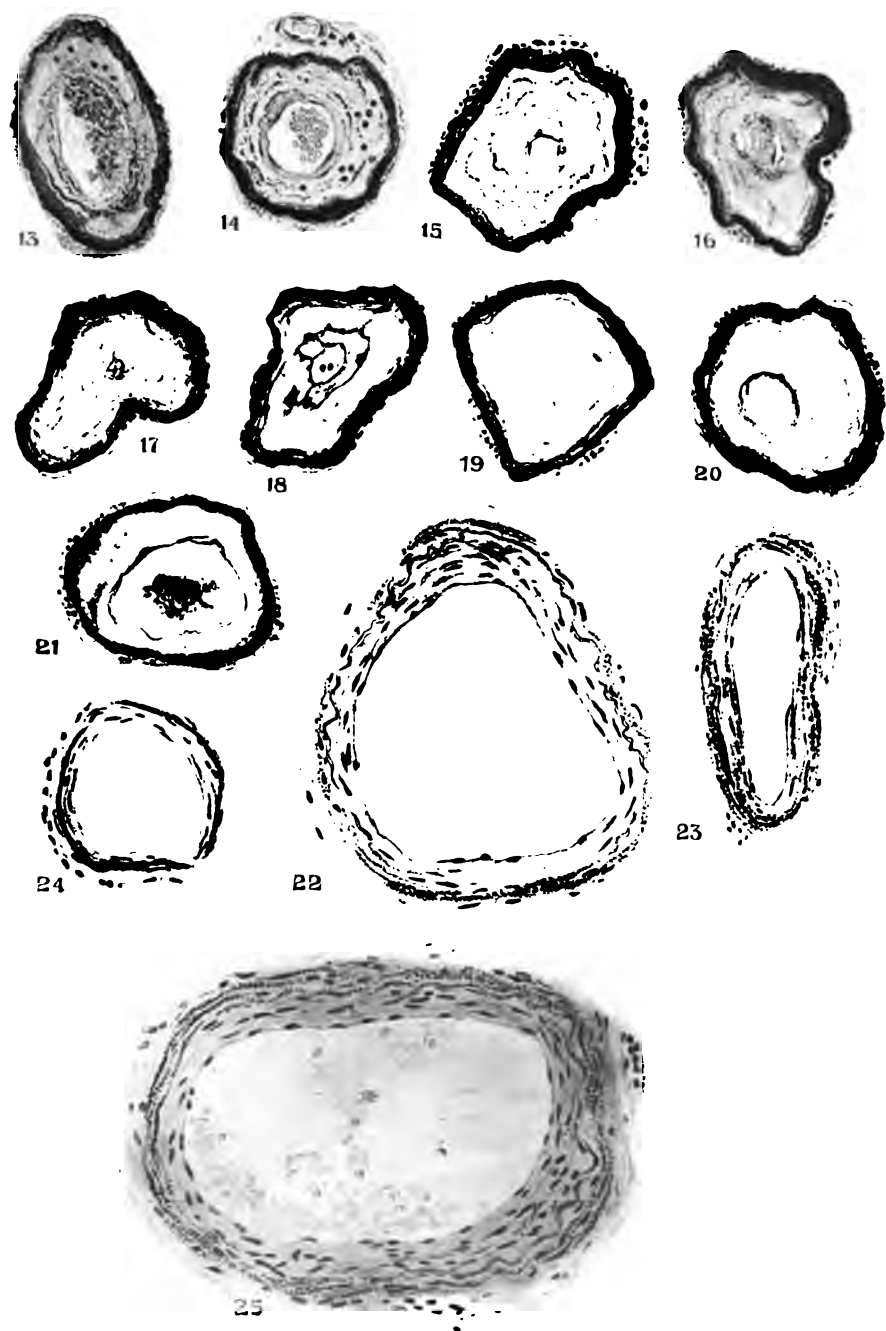
FIG. 29.—Sagittal section; non-decalcified. Calcospherites in places coalescing. Hæmatoxylin; ($\frac{3}{8}$ Reichert).

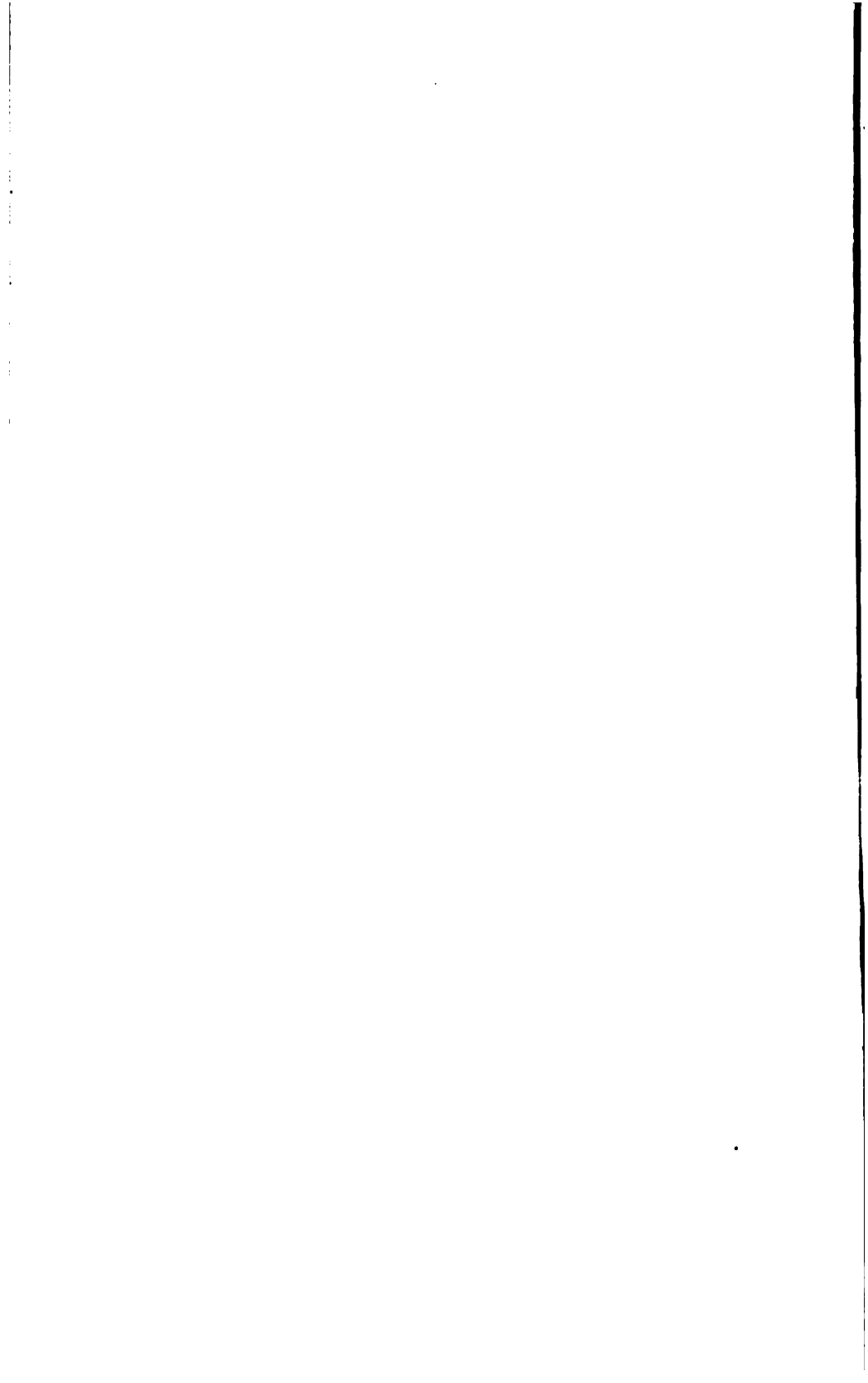
FIG. 30.—Half a vessel, non-decalcified; studded inside with masses of calcospherites; unstained; (Oc. obj. c. Zeiss).

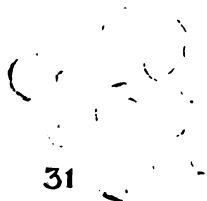
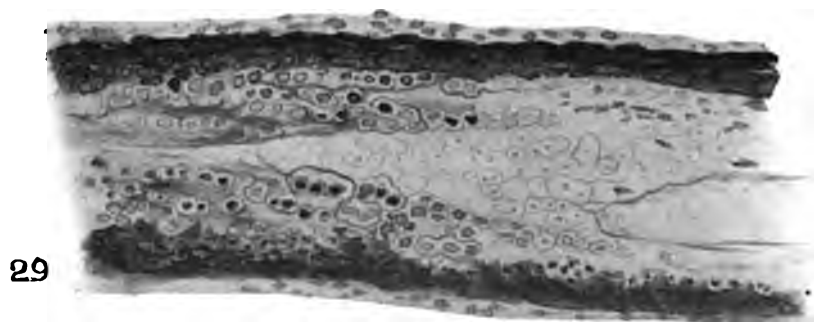
FIG. 31.—Cross-section of a non-decalcified vessel. Calcospherites; (Oc. 3 homog. Im., $\frac{1}{12}$ Reichert).

NOTE.—Since sending in the MSS. for the foregoing my attention has been called to the communication of Ernst (Zurich) at the last Naturalists' Congress, reporting isolated calcification of the arterial elastic membrane. The various points of agreement and difference between my work and his, as well as that of Matusewicz (Ziegler's Beiträge XXXI, p. 217) which he submits, cannot here be entered upon. I shall merely point out that their findings support all the essential points in my results. (It is also due to Prof. Pick to say that his manuscript has been in our hands nearly two years, but owing to unavoidable circumstances its publication has been delayed till the present time.—*Editors.*)









ON THE METHODS OF LATER PSYCHIATRY.

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That the doctrine of diseases of the mind is the most backward child of medical science is an observation as commonplace as true, and the causes are not far to seek.

The innate difficulty of rightly judging pathologic states of mind has furnished room from the beginning of history for the human proneness to attribute to the supernatural, to divine or diabolic agency, that which is not readily explained or understood, a proneness which the leaders among primitive peoples, namely, the priests, were quick to take advantage of, whether consciously or unconsciously, in establishing the authority of their own cult, and which in later times has still been encouraged by *spiritual leaders*, even among numberless pious communities of our own day. Among such, insanity as a disease of the mind did not exist. Individuals tainted in their wits were rather victims of the powers of darkness, sinners possessed of demons; the etiology of their misfortune was unrighteousness, the course chronic, the only therapy the heroic exorcism of the priest. In the presence of doctrines such as these, scientific inquiry found no place. The axiom that reason is never more reasonable than when she leaves alone the things which are above reason, is evidently capable of misinterpretation, and when so misinterpreted, of causing untold mischief.

But the ideas of demoniacal influence are by no means limited to ancient profane or biblical history, as the following recent case in one of the German clinics will illustrate. A young girl of the uneducated class, belonging to that religious persuasion in which the authority of the priest is absolute, was one night startled by hearing the word "swine" pronounced distinctly close to her ear, although no one was near her at the time. Considerably shocked and alarmed, she at once made the priest her confidant and he as

promptly told her that the voice was that of the devil, and that she must needs be guilty of some very heinous offence to be thus visited. Up to this time the girl had been apparently well. What the result would have been had she come under influence somewhat more healthy and enlightened than that of this spiritual guide it is useless to speculate. The fact simply remains that following his words she was plunged into a state of terror and excitement which speedily necessitated her transfer to the clinic for insane.

The observation of cases of mental alienation was of course coexistent with human history, but of the night of ignorance when the priests were at once religious guides, lawgivers and medical advisers to the cult, nothing but evil is to be recorded. From Hippocrates came the first ray of light, with the denial of the priestly authority in the affairs of medicine and the snatching from their hands of all that which pertains to the study and treatment of diseases of the body, among which he included diseases of the mind. Insanity was thus for the first time looked at from the physician's viewpoint and recognized as a disease of the brain. Conditions of excitement, depression and psychic enfeeblement were distinguished, certain features in the course, prognosis and treatment indicated, and the curability of many forms demonstrated.

But these beginnings of wisdom were lost. The history of dæmonology throughout the dark ages and of witchcraft reaching almost to our own day¹ furnishes the saddest index to human credulity and gullibility.

From the ruins of centuries, psychiatry, the most baffling department of knowledge was the latest to revive, kept down by the weight of superstition which was fostered by the teaching of New Testament times that insanity is possession of the devil. No less a man than Heinroth, the first professor of psychiatry in Germany, taught at the beginning of the last century that mental diseases were primary diseases of the soul, independent of the body, that their cause was a misuse of the moral freedom entrusted by the Divinity to each individual, in other words sin,

¹ In the present month (December, 1904), a case of alleged witchcraft was brought before a local court in Thuringia.

their cure a return to virtue, and their prophylaxis a pious life. With the combating and overthrow of the teaching of Heinroth, the latest survival of the naïve system which had its origin in the imagination of the priestly cult, modern psychiatry in the true sense may be said to date. It is, therefore, scarcely more than half a century old.

One of the causes of the slow advance in this field, which has even to-day to be reckoned with, is the fact that too often the choice of men to whom the observation of the insane is entrusted has been, to say the least, unfortunate. Psychiatry as a science, loved and cultivated, exists in but a few living centers in each country. In multitudes of hospitals and asylums it is a dead letter; the number of staff physicians is small and composed perhaps largely of men who have no aptitude or liking for laborious research. A meagre routine examination recorded possibly on a stereotyped printed sheet, together with the subsequent treatment of symptoms which arise, may constitute the entire history of the case. Under such circumstances it is useless to expect illuminating scientific investigations to be carried through. We have thus to do with the lamentable situation of *the most difficult problems which science has to present being left in the hands of men the least able to solve them.*

The old school classification of mental diseases, still widely current, illustrates the naïveté with which the subject has been approached. The most obvious modifications of the normal personality from day to day are those of the affect. An individual not considered of unsound mind may be observed on one occasion to be in high spirits, on another in the dumps, and it is assumed that if these two conditions be exaggerated to a pathological degree we have, roughly speaking, the diseases known as mania and melancholia, symptomatic diagnoses pure and simple, equivalent to saying that a patient whose chief objective symptom may be labored breathing is suffering from dyspnoea, and letting the diagnosis rest there.

Krafft-Ebing one of the early exponents of the symptomatic classification admits in the seventh edition of his text-book, published posthumously in 1903, that psychiatry (from this point of view) is still little more than a descriptive science.

Only recently in one of the great European centers of learning,

a new interne in a private mental clinic of considerable estimation, on coming before his chief for preliminary directions, received the following instructions, which are here repeated approximately in the words of the interne himself: "You are about to take up a difficult science, one in which the beginner is apt to find only utter confusion. If I give you, therefore, at the outset the key to the labyrinth you will be able to find your way with comparative ease. A patient is presented to you. He is elated or excited, talks about everything in the world, makes ill-timed jests, is constantly active, perhaps violent and destructive. This, in a word, is the picture of *mania*.

"A second patient is introduced. She is sad and self-reproachful, too wicked to associate with others, sits in silence and gloom, or bewails her pitiable condition. As likely as not she is suicidal. The picture is one of *melancholia*.

"Still a third patient. He is quiet and orderly and converses with you about what you will. At some given subject, however, he leaves the track and indulges in vagaries entirely out of keeping with his previously expressed ideas. He believes some one to be plotting against him, his idea of his own personality and position is distorted, he is an impossible member of the family. Such is the picture of *monomania*.

"Finally you have a patient whose mental activity is atrophied. His ideas are few. He is silly, forgetful, complacent, has no volitional impulses. He has become a negative quantity. The picture is that of *dementia*.

"Voilà la psychiatrie!"

The interne who received this instruction felt, however, that there was something beyond and outside of such a short and convenient scheme. Many another might not, and it is just this unquestioning readiness with which diverse mental anomalies are sorted and cast into a few spacious vessels of generalities, which has blocked the progress of psychiatry and contributed not a little to bring it into ill repute as a very subordinate department of medicine, meriting but brief attention, sufficiently mastered by every practitioner, and in many instances left to the tender mercies of asylum men of indifferent qualifications or slender interest in their work, thus leaving the brilliant minds to devote themselves to the more *live* problems of medicine and surgery.

Turning now to the other side of the question, we shall have in the following pages to consider briefly some of the achievements through which psychiatry is coming to honor among the daughters of science, and to review some of the chief means by which, during the modern period, the study of mental disease has accomplished whatever of good it now has at the beginning of the twentieth century to present. We shall have, therefore, to refer in succession to the three chief methods of observation, clinical, anatomic-pathologic, and psychologic, and to inquire what each has contributed.

I.

The clinical method yielded naturally the earliest results. In its fuller value it served first in France where Bayle in 1822 separated from psychiatric chaos the disease picture of dementia paralytica, which by virtue of innumerable clinical and anatomical studies since, has become the best known type of mental disease. The clinical method was later that of Hecker in differentiating hebephrenia, of Kahlbaum in appreciating the nature of katatonia, of Meynert in his description of amentia, of Falret in recognising cases of circular insanity, and of Kraepelin in the conception of maniac-depressive insanity and dementia præcox.

The clinical method in its fullest application implies an inquiry into the history of a case reaching back, not merely to the point at which Tristram Shandy affirms his woes began, but as far remote in the family history as it is possible to obtain trustworthy details, which must be given careful consideration in their possible bearing upon the case in hand. It must, however, be borne in mind that as present day society is made up, a certain amount of eccentricity, alcoholism, of degeneracy in sum, is to be regarded as the norm, and that practically no family history is complete without some stray psychopathic facts. The clinical history embraces therefore the time from an indeterminate point in the past up to the moment of the patient's death, when the pathological history begins, and its carrying out necessitates keeping the patient under observation after his hospital period, whether discharged cured or not, the careful comparison, in cases of so-called cure, of his condition at varying lengths of time after recovery with that before the illness, the comparative study of any subse-

quent attacks of mental disease, and the determination if possible whether they constitute independent symptom-complexes or are to be regarded as episodic manifestations of the original disease. Beyond the assumption of a special constitution or native predisposition, nothing can be more erroneous than to maintain that in a patient who has been once insane, all later aberrations must be part of the original condition, exacerbations of a primary psychosis, although to be sure, this is often enough the case.

In the clinical valuation of cases the attempt at classification of forms of insanity comparable to that which obtains in internal medicine has thus far proved to be futile. In the first place for the investigation and appreciation of a patient's mental condition it is not only unnecessary but often directly mischievous, to force his symptoms into some cut and dried disease pattern and designate it by a single definite name. In this way the presence of certain more or less well defined symptoms is assumed to indicate an equally definite disease entity, while other perhaps equally numerous or important phenomena are either disregarded or necessarily misinterpreted. An exact psychological classification which shall take into account all the members of human society is impossible. To be complete, we should have as many categories as individuals. It is even impossible to draw an accurate universally applicable line between normal and pathological in the human mind. How then in the manifestly more complex phases of disease shall we be able to assign each case forcibly to some fixed psychiatric pigeon-hole, the entire number of which, as most text-books bear witness, is so incredibly small?

Not diseases but individuals should be the prime object of study, not the ability to discover symptoms sought which shall go to make up an external pathological entity, but rather to appreciate in its nature the diseased personality by establishing its variations, fine and coarse, in all the phases of mental life, not from an arbitrary norm, but *from the norm of the individual himself*, which may depart widely from any given average and which must be determined anew in each succeeding case.

Provisional diagnoses are indeed unavoidable, and their chief value lies in facilitating the recording of cases and the comparative study of symptom groups as well as in favoring statistical work. The dangers, however, of metamorphosing symptom-com-

plex into disease entity, are shown no better than by following the part which the *amentia* of Meynert has played in the history of insanity.

During the first decade after it was described in 1881 the diagnosis of amentia found astoundingly increasing favor until in numerous clinics it came to cover perhaps half the cases. It was a convenient diagnosis covering a multitude of conditions, and obscure cases fell easily into the amentia reservoir, thus reducing materially that troublesome quantity, the undiagnosed group.

Meynert recognised but three acute psychoses, mania, melancholia and amentia, and of these amentia held the chief place. In his classical *Klinische Vorlesungen* (1890) melancholia occupies thirty-two pages, mania covers fourteen and amentia ninety-four. As synonyms of amentia (*Verwirrtheit*) Meynert enumerates at the head of his chapter: "Acuter Wahnsinn, allgemeiner Wahnsinn, Manie, Tobsucht, Melancholie mit Aufregung, Melancholie mit Stumpfsinn der Autoren." In the clinical description he includes cases of stuporous mania, delirium acutum, Kahlbaum's katatonia, and petit mal, and he mentions periodic as well as simple forms.

Besides his primary idiopathic amentia, Meynert recognised a limited symptomatic group in which the symptoms of amentia represented a stage or complication of other conditions, and it is this group which has since steadily grown at the expense of the former until to-day the very existence of idiopathic amentia is almost controversial. While many of Meynert's followers and particularly the Vienna School, still look upon it as a distinct form of alienation of not uncommon occurrence, it is by other observers considered for the most part episodic in other more clearly defined diseases. Kraepelin who perhaps represents the extreme in this direction allows at most $\frac{1}{2}\%$ to 1% of the total admissions under the heading amentia. Many cases formerly so diagnosed are now assigned to the katatonic group, or the motility psychoses of Wernicke, others to the maniaco-depressive, circular, and recurrent psychoses, while but a small percentage of cases, belonging to the asthenic or exhaustion psychoses remain under the original name.

Again, the variety of opinion which exists concerning the nature and frequency of occurrence of hysteria as a disease

entity, and the relation to it and the significance of hysteriform symptoms which are known to occur in practically every form of mental disease, illustrates the dangers of hard and fast diagnoses.

Just as on the anatomical side there is no single structural change which is certainly pathognomonic of a definite clinical type, so in the symptomatology it is fatal to nail one's faith to isolated phenomena. The symptom of random reply (*Vorbeireden*) which Ganser and Ræcke consider one of the distinguishing features of hysteria, Nissl as stoutly claims as a manifestation of *katatonia*, while Meyer concludes that it is a symptom of relative value only and bound up neither in *katatonia* or hysteria.

The diagnosis of dementia *præcox* which may reasonably be called Kraepelin's disease is extremely frequent in many of the German clinics and is gaining ground in France and England, and more slowly on this side. By Kraepelin himself it is regarded rather as a provisional diagnosis, admitting that the 15% of total admissions which in its present form it includes, is probably too high a figure, and that future investigation will perhaps separate the great group of dementia *præcox* into several more sharply circumscribed and possibly independent diseases.

Wernicke who strenuously opposed the teaching of Kraepelin in regard to dementia *præcox*, early pointed out that it was an error to cast a universally bad prognosis in the cases described by Kraepelin, affirming that a considerable proportion of the patients entirely recovered, a statement to which Kraepelin now also gives provisional approval.

Moreover the phenomena of motility out of which Kahlbaum constructed *katatonia* in 1874, and which Kraepelin makes a sub-type of dementia *præcox* including a third or more of the cases, occur in such a variety of conditions and present such differing outcomes, that the question—disease entity or symptom-picture—cannot be regarded as settled. Aschaffenburg is inclined to believe that every case of *katatonia* shows lasting defects, while Meyer is of the opinion that one-fifth to one-fourth of the cases completely recover.

The metamorphosis of disease into symptom is again illustrated in Korsakoff's syndrome. Described originally as an alcoholic psychosis in 1887, to which two years later Korsakoff

gave the name "*Cerebropathia psychica toxæmica*," it was found to have such varying etiology and symptomatology that Jolly proposed that "*Korsakoff's psychosis*" give place to "*Korsakoff's symptom complex*," and this is now a widely accepted usage. Kraepelin urges retaining the name *Korsakoff's psychosis* for the alcoholic form alone, placing in other categories the cases which develop on the ground of other intoxications or infections, and in arterio-sclerotic and senile conditions.

As another instance of the lack of fixity in mental diagnosis may be mentioned Kraepelin's involutinal or true melancholia. Up to the present, Kraepelin has looked upon this form as a distinct well-characterised disease, to be sharply differentiated from depressive attacks in earlier life, most of which are phases of maniac-depressive insanity. There is, however, some evidence to show that the involutinal depression may indeed form part and parcel of the larger group of maniac-depressive insanity.

This possibility has been given consideration by Kraepelin in certain illustrative cases, although he still holds to his original classification. The prominent symptom for which Kraepelin always looks in cases of involutinal melancholia lies in well developed religious delusions, particularly deep-rooted ideas of sin committed, which with a fairly uniform affect-tone, a slowly progressive onset and long duration constitute the chief features of the disease. The description while persuasive is not entirely convincing. It seems at least questionable whether sin-delusions should be allowed to count as differential characters in separating an involutinal insanity from one occurring earlier in life. It is a trite observation that man thinks and acts differently and is indeed a different being with each succeeding decade. The insistent object of thought in youth is replaced by another in manhood often inconsistent with the first, and the supreme object of the prime of life gradually loses warmth and reality with declining years. By this simple psychologic metamorphosis to which Haeckel has called attention in several learned men, who with advancing years, ceased to be scientific and became pious, the mental furniture is being constantly altered. It is well known that elderly persons are often occupied by religious ideas which never came conspicuously to the surface

during their more active and healthy years. It is, therefore, easy to see how insanity attacking individuals of different ages will be expressed in delusions of varying content dependent upon the changing ideas, ambitions, and activities which may be considered normal for the respective periods of life; and it is natural to assume that an attack of depression in the senium would be characterised by preference by ideas of sin and personal unworthiness and delusions in general associated with what may be a perfectly sane appreciation of the fact by the individual that he is mentally and physically on the downward path, and that he is losing grasp on life and its activities, while such manifestations might be absent entirely during a depressive attack in a younger individual.

Moreover the personal equation and the results of environment have here their part to play. Cowper who had been educated in a hyper-religious atmosphere gave expression in numerous re-occurring depressive attacks almost exclusively to delusions of strongly religious coloring.

It would seem, then, that the existence of a distinct melancholia of old age to be separated from periods of depression at other times of life, such as occur in maniac-depressive insanity, except in so far as the psychic expression of any psychosis may be influenced by the time of life, is at least open to question.

As has been said, the paramount object does not lie in making the observed phenomena in a given case fit snugly into the rubric of some disease-pattern. The practical object is rather to learn the value of individual symptoms and symptom groups as affecting prognosis, to be able to judge whether the patient will recover or become demented; whether the present illness is likely to be long protracted; in case of recovery, or improvement, what social and business relations will he be capable of; what are the probabilities of recurrence; what are the dangers of suicide and crime.

Aside from this, the scientific interest sees in the modern development of *individual psychology* a leading which must be followed by those who appreciate that a hundred diseased human minds cannot profitably be tossed into a half-dozen text-book categories.

Indeed with the facts at present accumulated, and with

pathologic anatomy, in spite of the great significance of its actual contributions, still in an embryonic state, when we consider the fields yet unexplored, one feels the force of Ziehen's observation that a single ideal classification of the psychoses may be impossible.

A few well defined clinical types exist, it is true, and it is those forms among them which are recognised as dependent upon demonstrable pathologic alterations in the brain tissue which will form the basis of the psychiatry of the future. That the so-called "functional psychoses" will ever entirely disappear from the classifications is perhaps hardly to be hoped, and while they exist they make up the pre-eminently fluctuating portion of our material. A purely symptomatologic diagnosis, or even an elaborate "clinical" one, which is after all only the *n*th power of the symptomatologic, if unsupported by laboratory facts will never become binding for observers of subsequent times. Thus fell one by one into disuse the various systems which taught that insanity was a primary and independent disease of the mind or soul, without reference to its physical basis.

If one were to assemble all the conditions which various authors have described under the single designation "melancholia," one would have a tolerably complete list of known and unknown mental anomalies.

In its earliest usage melancholia meant simply madness. Hippocrates refers to it as a variety of mania associated with gloom. Most writers up to the time of Esquirol use the term to denote all cases of so-called partial derangement of the intellect, on the assumption that depression is usually an accompanying feature.

Chiarugi³ toward the close of the eighteenth century insisted that in the disease commonly known as melancholia, which he also described as a partial insanity in contradistinction to mania which represented a general insanity, the important and characteristic symptoms were the *fixed ideas*. The nature of the affect-tone Chiarugi looked upon as of secondary importance. A patient suffering with melancholia was not necessarily depressed, anxious or fearful; he might even show the symptoms of mental exalta-

³ Beiträge zur psychiatr. Klinik. Sommer., Bd. I, H. 4, 1903.

tion. Cullen's *partial disturbance* of the understanding, and the *mania* of Haller are brought together by Chiarurgi under melancholia, the insanity of fixed ideas; and the *insania hilaris* of Celsus, while included in the same general category is denominated melancholia spuria.

Chiarurgi indeed recognised the inconsistency of applying the term melancholia to patients who had no symptoms of depression and suggested that were it not for the general acceptance and understanding of the word in its perverted sense he should advise replacing it by the denomination, *insanity of fixed ideas*. It remained, however, for Esquirol to separate these cases described by Chiarurgi and place them together in a distinct group for which he originated the name *monomania*.

Pritchard, in his treatise on insanity (1835) did not recognise melancholia as a separate disease, but made it one of the varieties of his all-embracing *moral insanity*.

Such are some of the phases in the history of melancholia, the modern type of the functional psychoses, and originally the generic term for all forms of madness.

In view of the facts that no system of classification has yet been found which will without forcing account for *all* the cases which present themselves, and that the founders of systems the most widely adopted in their time, admit that in a fourth to a third of their cases an absolutely certain diagnosis is impossible, it is evident that a sufficiently extensive field still remains unconquered.

The best that is often possible is to describe the phenomena which present, and then to watch and wait, with note-book in hand. In this way material will be accumulated which will have more value for the men who come after than if the details of description had been left out and their place taken by diagnostic phrases.

The zeal for finding, as soon as possible, a diagnosis, after which through the arbitrary satisfaction of having "catalogued the case," searching observation of the patient relaxes, cannot but be pernicious. Better the seeking through the study of the actual conditions at the various stations along the incoming, central, and outgoing tracts of the patient's higher reflex arcs to ascertain in just what manner and degree he varies from his personal norm, substituting for the simple diagnosis which in

many cases is impossible, the composite mental picture thus obtained.

II.

The second method of investigation in mental disease, that of post-mortem section and the microscope, although its results may appear relatively small when we consider the definite relations which have long been recognised between structural change and clinical manifestations in other organs of the body, has nevertheless contributed in no small measure to the solution of many of the problems with which we have to do. It is, moreover, a method big with promise for the future, although in some quarters unfortunately, the enthusiasm with which pathological researches in the cortex were greeted following the discovery of improved methods of observation, has been allowed to cool as a result of the inevitable slowness with which the facts of cerebral pathology must accumulate.

Diseases of the mind must be regarded as diseases of the brain, and it is here that we must look, particularly in the elements of the cerebral cortex, for those alterations which underly the clinical symptoms which constitute the psychoses. Under ideal conditions both clinical and anatomical diagnoses should be possible, independent of each other, and upon comparison should be found to fit to the last detail. This is the distant goal which, from the facts at present available, may be considered doubtful of attainment, although it is slowly but steadily being approached.

The morbid anatomy of the individual psychoses began with the observations of Bayle in 1822 on dementia paralytica in which he described changes in the central organs, more particularly in their enclosing membranes, which he looked upon as characteristic of the disease.

Esquirol^{*} had pointed out that in certain patients the symptoms of dementia were complicated by disturbances of articulation and progression and sphincter paralysis, occurring in succession, and had shown that the discovery of such paralytic symptoms in speech and gait, in however mild a form, greatly increased the gravity of the prognosis. The two manifestations, however, of paralysis and dementia, he regarded as expressions of separate and

^{*} Dictionnaire des sciences médicales, t. viii.

independent disease conditions, associated as it were by accident. The paralytic phenomena represented a second affection complicating the dementia but not to be confused with it, "pas plus que les signes du scorbut qui complique souvent cette maladie ne peuvent être pris pour elle."

Bayle was the first to recognise that the various mental and physical symptoms which had so often been observed in association by Esquirol and his followers, were in truth all manifestations of one and the same disease, which he believed to be dependent upon a chronic inflammatory process in the meninges. "On ne saurait donc se refuser d'admettre que ces deux ordres de phénomènes sont les symptômes d'une même maladie, c'est-à-dire d'une *arachnitis chronique*."

At a time when the oil immersion had not yet been turned on the cortex, and when even its coarser internal structure was still a sealed volume, the alterations in the membranes, usually so pronounced, were naturally the first to attract attention.

Calmeil,⁴ in his report of sixty-four cases of paresis, likewise insisted upon the meningeal lesions as the chief characteristic of the disease. Patients which died from accidental causes and came to section during the early stages, and those which had presented the symptoms of paresis in but moderate degrees of intensity, showed only an inconsiderable but varying increase in the intracranial fluid, which remained clear, a corresponding dilatation of the ventricles, and a slight *apparent* thickening of the inner membranes due to "serous infiltration."

In those cases which died when the disease had run its course and which had shown the various clinical signs in typical intensity, the macroscopic findings were much more pronounced. Here was to be observed above all a clouding and thickening of the pia-arachnoid with adherence to the surface of the convolutions. The adhesions were, as a rule, most extensive and firm over the anterior and superior or inferior aspects of the hemispheres, but were often general, involving the whole surface of the brain, in some cases including the cerebellum. Decortication was the consequence of the attempt to strip off the pia.

In addition to an accumulation of fluid, clear, turbid, or san-

⁴De la paralysie considérée chez les aliénés, Paris, 1826.

guinolent, in the subdural space of brain and cord, Calmeil alluded to another particularly constant and characteristic appearance due to an excess of fluid in the subarachnoid cavity. This oedema of the membranes causes a separation of their layers and accounts in part for their increase in thickness. Moreover, it follows the pia between the convolutions, distending the fossæ, and gives to the whole surface of the hemispheres a peculiar appearance of soft gelatin which quivers when touched or jarred. The dilatation of the ventricles and the amount of contained fluid stood in proportion to the accumulation within the dura. Naked eye examination showed in the cortex wide departures from the normal in general appearances, color and consistency, while the underlying white appeared healthy in the majority of cases. The dura was in most instances reported normal. Hæmorrhagic foci were, however, noted both in the membranes and brain substance, as well as cortical areas of softening, ependymal granulations in the walls of the ventricles, and even changes in the calvarium itself.

Such were the beginnings of the pathology of paresis. They had to do only with macroscopic changes, but in this respect they must be regarded as tolerably complete, even to-day after a lapse of eighty years. Calmeil's capital finding, the thickened adherent pia, is the most prominent and constant naked-eye appearance in the paralytic brain. It was chiefly the adhesions to which Calmeil called attention, and both these and the actual hyperplasia and infiltration of the inner membranes often reach an extreme degree not approached in any other pathological condition.

The development of the finer microscopic technique, making possible a histologic differentiation of the psychoses, began with the introduction of elective staining methods, about twenty-five years ago. Previous to this, carmine, introduced by Gerlach in 1858, was the universal stain, and the fundamental facts of brain anatomy and pathology were worked out from carmine preparations. Inasmuch, however, as this method afforded only diffuse pictures in which everything was stained red, the only distinction being slight variations in shade, it is not surprising that finer anatomical relations, as well as the whole gamut of histopathological details as we now understand them, remained undiscovered.

The new era was ushered in by Exner, who discovered that by examining in ammoniated glycerin sections from material which

had been hardened in osmic acid, he obtained pictures in which nerve fibers, even those of the smallest caliber, such as were quite indistinguishable in carmine specimens, were stained black and stood out with great distinctness on a light background, all the other elements remaining unstained. The discovery of Exner formed the starting point in the development of the elective myelin sheath method. Its first fruits were the remarkable observations of Tuczek (1884), showing a progressive disappearance of the tangential and supraradiary fibers in the brains of paretics. This change, at first supposed to be specific in paresis, although especially characteristic of that disease, is now known to occur as well in other terminal conditions, notably senile and epileptic dementia.

As early as 1882 Weigert reported the first of a series of experiments which culminated in 1884 with his hæmatoxylin myelin sheath staining method, to which is due practically our entire knowledge of the normal fiber content of the brain, making possible the myelinogenetic studies of Flechsig and the production of the valuable atlases of Wernicke.

But fiber anatomy presents only one side of the question, and for the understanding of pathological processes going on in the cortex, by far the least important. There remained to be worked out an elective cell stain which would reveal in a constant manner the minute structure of the cytological elements of the cortex and their products, unobscured by fibers, thus supplying a picture complementary to that obtained by the Weigert method. To this subject Nissl had already turned his attention in 1880. During the ten years following he worked on his method, the development of which furnishes one of the most interesting chapters in microscopic technique, and published in 1890 his procedure in its final and perfected form.

It was now possible to institute studies which should clear up many of the questions of the anatomy and pathology of the *nervous elements* of the cortex, both cells and myelinated fibers. Another tissue, necessary to complete the picture, was still obscure, viz., the *non-nervous* intercellular substance, or neuroglia, and here again the task fell to Weigert's hand. In 1895, after seven years uninterrupted work he made public his elective glia-stain together with the results he had obtained with it in studying

the normal distribution of neuroglia elements throughout the central organs. Just as in the instance of the nerve fiber stain, so here in the case of the glia, it is the method of Weigert which has made possible the researches which have furnished the most of our knowledge of the intercellular substance, the origin, relations, and pathological changes of the glia fibers.

Such in brief has been the origin of the three most important technical procedures of which the brain histologist of to-day makes use. To them must be added among others the Marchi method for degenerated fibers, Van Gieson's method of collagenous connective tissue, and especially a third staining process of Weigert, his elective elastic tissue stain which is of so much importance in demonstrating syphilitic, arterio-sclerotic, and other vascular changes.¹

The contributions of the microscope to psychiatry during the past twenty years have indeed been great, and the hopes for the future can be no less. By the combination of various elective staining methods through which definite constituents of the cortex can be isolated and studied separately as well as in their mutual relations, a collective appreciation of the character of the *disease process* has been attained in certain pathological conditions with an accuracy of detail before undreamed of.

What have been the results of the application of the new technique to the study of paresis, in furnishing the histopathologic counterpart of the excellent macroscopic pictures of Calmeil? First came the observations of Tuczek on the disappearance of the tangential fibers. Later, under the influence of the neurone doctrine, the nerve cell was kept tetanically in the center of the field until it was learned that of all the manifold alterations which the nerve cells present in cases of paresis there is none which is

¹Our technical armamentarium is still deficient in two chief features. We have as yet no *fibril* method which can be relied upon for the determination of the *morbid changes* in these structures, and in the second place, in the intercellular substance, the nervous grey of Nissl, which remains after the nerve cells and their demonstrable processes, the glia nuclei, cell bodies and fibers, and the vascular elements of the cortex have all been accounted for, and whose presence has been assumed in explanation of the width of the supraradiary layers in man, particularly in the frontal convolutions. This tissue has thus far eluded every attempt at demonstration.

specific for the disease, none which is either a constant finding or which may not also be found in a variety of other conditions.

Finally the attention of histologists has been directed to the pathological process as a whole in its effect upon *all* the elements together which go to make up the central organs, and more particularly in its modes of expression in the cortex cerebri. It is largely the accumulated results of studies in the finer pathology of paresis which have made it now the best known of the mental diseases. The microscope to-day is the court of last appeal. In cases of doubt, when clinical signs fail or are inconclusive, the microscopic diagnosis is the most certain and trustworthy.

To review even summarily the various tissue alterations which taken together make up the definite pathological picture which is recognized as characteristic and specific for paresis, is hardly possible within the scope of this discussion. The disease-process is a diffuse one in two senses; first, that no region of the cortex is spared, although the widest variations in intensity may be observed, the occipital pole of the hemispheres in typical cases often showing but slight manifestations of the disease while in the frontal lobes the most advanced degenerative changes are found; and second, that it is not a lamellar condition affecting by preference certain levels of the grey, but ravages the cortex without discrimination from pia to the medulla.

In normal brains the only native constituents of the grey substance are ectodermal in origin, the blood vessels being, as Weigert pointed out, nothing more than foreign structures penetrating from without, and not representing part of the brain parenchyma, just in the sense that the alimentary tract is merely a continuation of the external surface of the body, its contents lying really without the organism. Weigert demonstrated a glia sheath bounding the adventitia of the blood vessels without, which is continuous with the subpial glia network; and the surfaces adjoining the vessels but separated from them by the glia sheath he designated collectively as the *internal surface* of the cortex. Moreover the white blood cells which have been widely stated to occur, even normally, scattered promiscuously through the grey matter and to lie often in the pericellular spaces, have been shown by the experimental work of Nissl, not to wander, as a rule, even pathologically, beyond the confines of the vascular adventitia, ex-

cept in cases where tissue relations are utterly destroyed, as in hæmorrhagic foci, abscess, etc.

While then normally, only ectodermal derivatives are to be looked for in the cortical parenchyma, in paresis, a new mesodermal element makes its appearance and is often present in astonishing numbers. These rod-shaped structures (Stäbchenzellen) are derivations of the elements in the vessel-walls, and might be assumed theoretically to occur in any condition in which vascular proliferative activity is pronounced. This is, however, by no means always true, for while in paresis they accompany a more or less marked capillary new formation, in other conditions with even greater capillary proliferation, as when tissue defects resulting from focal necroses are to be filled, rod-cells may be sparingly present or absent entirely. In healthy animals, used for experiment, rod-cells have not been found. Their presence, therefore, in such characteristic abundance in paresis suggests rather a regressive than progressive vascular change. Along with new capillary sprouts, these elements are given off prodigally from the vessel parietes, wander a certain distance and lie isolated in the surrounding tissue. They subserve no apparent function, have not been observed subsequently to contribute to the formation of new capillaries, and sometimes show degenerative changes in their cell protoplasm.

A second mesodermal form derived from the vascular walls, the *reticulated cell* (fat granule cell, epithelioid cell, corps granuleux, inflammatory cell of Friedmann, compound granular corpuscle, Gitterzelle of Boedecker, Juliusburger, and Nissl), which is the wandering phagocytic cell par excellence of the nervous system, is also an occasional appearance in paralytic brains, but is observed only in connection with necrobiotic foci, as in an area of softening following hæmorrhage, where its phagocytic function is called into service in removing the broken down ectodermal structures of the region as well as the escaped hæmatogenous elements.

In the vascular system itself, beside the progressive and regressive alterations in the various mural elements, the *infiltration of the adventitial sheath* with lymphocytes, plasma cells, first discussed in connection with paresis by Alzheimer, and an occasional mast cell, is the one phenomenon which gives to the para-

lytic cortex almost macroscopically its striking and characteristic appearance.

Among the cortical constituents proper, the ectodermal elements, ganglion cells and fibers and neuroglia, regressive changes in the former and progressive changes in the latter go hand in hand; yet in no other diffuse disease process are such luxuriant outgrowths of glia met with as in paresis. Not only are the intercellular substance of Weigert greatly increased both as to number and size of the individual fibers, and the subpial and extra-adventitial mesh markedly thickened, but the protoplasmic cell bodies themselves show often enormous hypertrophy, as well as a very considerable increase in the total number of elements. Among the proliferative forms, the peculiar type with large pale eccentric nucleus and greatly exaggerated cell body (*gemestete Zelle von Nissl*) perhaps generally known as the giant spider-cell is preeminently characteristic. Another increase-form among the supporting elements, the *glia clusters* and *nebulae* are also particularly common in paresis.

Taken together the various pathologic findings, the more important of which have been mentioned, make up a microscopic picture, which it is impossible to confuse with any other condition. The irregular disappearance of the ganglion cells, the overgrowth of glia, the profound alterations in the intercellular substance, the often enormous increase of smaller blood vessels, the extensive adventitial infiltration, and the invasion of the cortex by hordes of mesodermal elements, all these factors contribute to a greater or less disorganization of architectonic relations, both in the breaking up of the columns of Meynert and the confusion of lamellar boundaries, which transforms the beautiful orderliness of the normal cortex into veritable chaos.

This picture may confidently be looked for in every case of dementia paralytica, it being understood that the *degree* of the progressive and regressive processes in the several categories of native and new formed elements, and the relation between the changes in one tissue and those of another, may vary within wide limits, not only in different cortices, but even in different areas of the same hemisphere. Alzheimer* has recently covered mono-

* Nissl's Histologische u. Histopathologische Arbeiten, Bd. I.

graphically practically the entire field of the cortical pathology of paresis, furnishing illustrations of the chief types of morbid elements to be encountered.

It is readily understood why paresis was the first psychosis to which microscopists directed their attention, and also perhaps why it has been only within very recent years that the systematic histologic analysis of the cortex has been undertaken in all mental cases of whatever nature, whether presenting recognizable macroscopic abnormalities or not. In the short time, however, the foundations have been laid for an anatomical differential diagnosis which is bound to play a rôle of increasing importance in the collective study of clinical forms. In the first place the normal regressive changes which characterize the cortex in the senium have been worked out, and from these have been separated by reason of their greater intensity and the occurrence of certain peculiar appearances in glia and ganglion cells, the cortical alterations which must be assumed to underly senile dementia. These changes are, as a rule, most pronounced in the upper layers of the cortex.

Nissl has further described in katatonia a peculiar type of proliferative glia, which in contradistinction to senile dementia is found by preference in the deep layers of the cortex below the granular zone. He does not maintain that this glia form is specific for katatonia, but he declares, that in no undoubted case of katatonia in which he has had the opportunity of examining the cortex has it been absent, while its possible presence in other conditions appears to be merely accidental, and indeed rare. This type of glia differs fundamentally in morphology from that which is typical of senile dementia, and both of these again are entirely different from the forms which characterize paresis. Alzheimer has demonstrated in Weigert glia preparations a phenomenon in which the proliferating satellite cells, two or three of which may occur normally in close proximity to the ganglion cells, give off processes which closely embrace (*umklammern*) the body of the nerve cell to its apparent damage. In elective cell-preparations this condition presents the picture of so-called *neuronophagia*.

Alzheimer has further contributed to our knowledge of the pathology of the cortex by his studies in arterio-sclerosis. In 1894 he described clinically and pathologically under the name of *arterio-sclerotic brain atrophy*, a condition formerly confused with

paresis, but which he showed to have nothing to do with that disease. At the same time Binswanger enriched the field of cerebral pathology with the picture of *chronic diffuse subcortical encephalitis*, a disease also dependent upon arterio-sclerotic changes. Later Alzheimer added two other forms, *perivascular gliosis* and *senile brainwasting* (Rindenverödung), both of these and Binswanger's subcortical encephalitis representing subforms of the general condition, cerebral arterio-sclerosis.

The differentiation of the arterio-sclerotic psychoses, characterised by rapid exhaustibility, impossibility of sustained mental effort, affective depression and apprehensiveness of wavelike intensity, defects of memory, especially of the recording faculty (Merkfähigkeit), aphasic and other focal symptoms, with intercurrent seizures varying in severity from vertiginous to apoplectic-form shocks, the symptoms appearing late in life and resting upon a definite anatomical basis, has been one of the distinct gains of later psychiatry.

Diffuse cerebral syphilis is another primarily vascular condition which can, however, usually be separated both anatomically and clinically from other forms of arterio-sclerosis, as well as from general paresis.

Along with the clinical study of cases, a diagnostic measure of considerable importance which has recently been brought into service in connection with the pathology of the psychoses is the intra-vitam examination of the cerebro-spinal fluid.*

The simple therapeutic lumbar puncture introduced by Quinke in 1890 was first turned to cytodagnostic purpose by Widal in 1900. As a diagnostic measure it includes the systematic investigation of the physical, chemical, cytological and bacteriological reactions of the fluid obtained by lumbar puncture. Bacteriological examination is especially called for in the differentiation of the several meningitides.

* Widal, Sicard, Ravaut, Soc. d. Biol., 13 October, 1900; Sicard, *Le liquide cephalo-rachidien*, Paris; Schäfer, *Allg. Ztschr. für Psych.*, Bd. LIX, 84; Dupré et Devaux, *Bull., d. l. Soc. méd. des Hôpitaux*, 13 June, 1901; Nageotte, *ibid.*, 31 January, 1901; Séglas et Nageotte, *ibid.*, 13 June, 1901; Guillain et Parant, *Rev. Neurol.*, 30 April, 1903; Joffroy, *Annales méd-psychologiques*, Sept., 1901; Ravaut, *Annales d. Dermatol. et d. Syph.*, January and July, 1903; Campbell, *Review of Neurol. and Psychiatry*, January, 1904; Nissl, *Centralbl. für Nervenheilk. u. Psych.*, April, 1904.

Regarding the nature of the cerebro-spinal fluid itself and its alterations in disease, by use of the technique of Widal, many facts have already been accumulated, the more important of which may be thus summarised. In the normal fluid are to be found traces of serum globulin, while serum albumin is absent or present in extremely small quantities. In paresis, even in the very early stages, albumin is increased in amount, usually in considerable degree. Guillain and Parant examining sixteen cases of paresis found a constant well marked albumin reaction, while in twenty other cases of various psychoses the reaction was negative. Nissl in a series of seventeen sure cases of paresis obtained in each instance a positive reaction, and in forty-one other cases found albumin absent (except in several patients with luetic infection or definite meningeal involvement). The finding of albumin is not peculiar to paresis, but merely implies an organic meningeal lesion; it occurs in tabes, or any exudative meningitis, and may be observed following hæmorrhage (cerebral arterio-sclerosis).

Parallel with the albumin reaction is an increase in the cellular elements (lymphocytes) of the fluid. Normally one sees but one to three elements in an oil immersion fluid. In paresis a marked increase is the rule, and they may be present in such numbers that counting becomes difficult. In any mental case showing the chemical and cytological reactions, paresis is the first disease which has to be reckoned with. Albumin and lymphocytosis are usually associated, but not always and the albumin reaction is the more constant of the two.

If a suspected case gives negative results at the first examination, if it be paresis the fact is usually established at the second or third puncture, undertaken after intervals of not less than ten days to allow the subsiding of any possible reactionary lymphocytosis following the first operation.

The various involutional and senile psychoses, alcoholic insanities, the maniac-depressive and dementia-præcox groups as well as the so-called functional neuroses furnish regularly negative results; and in affording an additional means of early excluding these forms from among the differential possibilities in certain obscure cases of paresis or other chronic brain disease with meningeal involvement, cytodiagnosis fills an important place among our methods of examination.

A further chemical reaction, that of cholin, was first observed by Mott and Halliburton in the blood and cerebro-spinal fluid of patients suffering with paresis. Cholin is one of the katabolic products of the fat contained in the myelin sheath of nerve fibers, and the original supposition that its presence in the blood and cerebro-spinal fluid was limited to cases of paresis has been disproved by subsequent observations, both of the discoverers and of a number of other investigators. Mott found it in two cases of beri-beri, "where the disease had been of sufficient duration to give the Marchi reaction in the nerves; but in another case, in which the patient had died in the early stage from heart failure, there was no evidence of cholin." Gumprecht demonstrated its presence in cases of meningitis. Donath found it in nearly all cases of epilepsy, Rosenfeld showed it to occur in a variety of organic diseases of the nervous system, tumor, encephalitis, apoplexy, multiple sclerosis, epilepsy, paresis, tabes, Korsakoff's psychosis.

Representing as it does a normal product of the breaking down of nervous tissue the amount of cholin obtainable from the cerebro-spinal fluid may be taken as an index of the extent of the degenerative process. That it was first detected in paresis is easily understood, as Mott observes, from the fact that paresis of all diseases is the one which presents the most far-reaching downfall of the nervous parenchyma.

III.

The third viewpoint for the study of mental disease, that of psychologic experiment, is the newest and consequently least well known and appreciated among alienists. Experimental psychology had its birth in the laboratory of Wilhelm Wundt in Leipzig in 1879, since which time similar laboratories have been founded in many of the other German universities and abroad. In no other country, however, has the growth of experimental psychology been so rapid as in America, where the pupils and disciples of Wundt have given themselves to the work with a devotedness of purpose which commands the admiration of the Germans themselves.

This work both at home and abroad had yet no direct connection with medicine, and between psychology and psychiatry there

existed a lamentably wide gulf, a gulf which still exists in the majority of institutions. On the one hand, alienists have not been trained psychologists, and on the other, the psychologists have, as a rule, had little or no knowledge of clinical psychiatry. It remained, therefore, for Kraepelin to institute the bridging of the gulf by organizing in 1890 a laboratory for experimental psychology in Heidelberg in connection with the university psychiatric clinic, in which both normal and pathologic mental conditions should be studied by the same experimental tests. In this way he hoped to arrive at a closer analysis and understanding of the symptoms which constitute the various clinical pictures than had hitherto been possible. How far he has been successful, a look through the "Psychologische Arbeiten" will show. This publication, devoted exclusively to the experimental researches of Kraepelin and his pupils was founded in 1894, and now fills four large volumes, a survey of whose contents suffices to indicate how important a place this precise mental vivisection occupies in the analysis and diagnosis of diseases of the mind.

With the removal of Kraepelin to Munich, a new psychological laboratory has been set up in the psychiatric clinic of that city from which the "Arbeiten" will continue to be published, while the one in Heidelberg has ceased to exist. A second laboratory was established by Sommer in the psychiatric clinic in Giessen, and a third is to be opened in Tübingen. These, with the laboratory at Berlin under Ziehen, are at present the chief places where psychologic experiment forms a regular and important part of the armamentarium of the alienist. The method thus inaugurated has contributed very materially to the knowledge of insanity, both in throwing light upon the pathogenesis of symptoms, and in correcting the conclusions of clinical observation.

The observer has to do in the first place with the exact measurement of various mental processes in health and disease. Studies in the *simple reaction time* (interval required for receiving a sensory impression and translating it into a motor response measured in thousandths of a second) in normal individuals, showed that there were two chief reaction-types, muscular and sensorial. In those subjects whose reaction is of the muscular or motor type, the attention during the experiment is fixed upon the execution of the movement, hence in these individuals the reaction

time is short and errors are fairly common, both from misinterpretation of the sensory impulse and from the tendency to premature reaction. On the other hand persons of the sensorial type fix the attention on an earlier point in the reaction-circuit, namely the incoming sense-impression. Their interval is, therefore, longer than that of the motorists, and their errors correspondingly fewer. The time of the simple reaction to auditory stimuli averages about 125 σ ($\sigma = .001$ ").

In addition to the simple reaction, other more complex methods are made use of, such as those involving a definite act of recognition of the form of the stimulus, those involving acts of decision and choice, and finally those requiring various forms of associative activity. The value of the application of these tests in accessible mental cases is obvious. In maniacal excitement, for example, the simple reaction interval may be shortened as a result of the increased psychomotor irritability, but on the other hand, associative activity in spite of the apparent hyperfunction, is actually diminished, the assumed increased rapidity of cerebration being in reality a deception, according to Kraepelin resulting from the greater divertibility of the attention and the increased facility of motor discharge.

Normal and abnormal *phenomena of association* have been the object of a special series of observations by Aschaffenburg who defines four great groups as follows:—(1). Inner associations, (2). Outer associations, (3). Sound associations, (4). Indirect associations.

Inner associations are those which stand in the relation of cause or effect, coordination, subordination, or predication to the original word used as stimulus.

Outer associations are those whose relation to the original word is merely one of co-existence in time or space, of speech reminiscence or of similarity or identity.

Sound associations are such as depend not upon the sense of the stimulus-word but upon its sound-image, and may consist in the addition of syllables to the original word to make a new one, the meaning of which has no connection with the first. In this group also belong the rhyming associations both senseless and meaning.

The fourth great group of *indirect associations* are those in

which the relation of the response to the stimulus must be sought in an unuttered usually subconscious intermediate association.

Aschaffenburg showed that in experimental fatigue resulting from a night's watching the number of sound associations was greatly increased at the expense chiefly of the inner associations, the latter representing the highest type of associative activity, the sound associations the lowest. Studies such as these are of great significance in the consideration of the pathogenesis of symptoms in actual alienation, in which conditions of exhaustion are so often the underlying factor.

Aschaffenburg found that in alcoholism, as well as in mania the sound associations were increased in frequency and the inner associations decreased, just as in his experimental fatigue, and he associated this altered ratio with the increased motor excitability which is characteristic of all three conditions. The group of conditions belonging to Kraepelin's exhaustion psychoses present in their general characters merely the symptoms of the experimental fatigue writ large.

Gross in an extensive series of observations on the *handwriting* determined in detail the character of this method of psychomotor expression in health, and followed its variations representing changes in the personality in various psychoses. He described particularly the character of the writing-curve in various forms of maniac-depressive insanity and in katatonia.

The work of Michelson on the *depth of sleep* demonstrated the nature of the two great sleep-types, characterising respectively the morning worker and the night worker. In the first type, sleep is profound in the early part of the night, or within the first half-hour after going to sleep, and becomes shallow during the early morning hours. The individual awakens early, feels refreshed and is capable of doing his best work before noon.

In the second type profound sleep is reached only after several hours, and there is no such marked decrease in depth with the approach of morning as in the first type. Persons belonging to this class are usually unfit in the morning and their working capacity gradually develops during the day, so that they are capable of their best effort during the afternoon or at night. The great body of neuropathic individuals of our generation belongs mostly to the night-worker type.

To review the four volumes of the "psychologic studies" is entirely beyond our present purpose. For this the reader is referred to Weygandt's^{*} comprehensive résumé, also to Hoch's^{*} briefer review.

The researches themselves furnish the groundwork for a scientifically accurate conception of insanity, embodying as they do the application of the exact laws of the psychological laboratory to the clinical consideration of mental cases. Particularly suggestive are the studies on the psychological effects of drugs and poisons; and the demonstration of the relation between anatomical changes in various forms of intoxication (as revealed by post-mortem section and by animal experiment), and abnormal mental function furnishes one of the most immediate and fruitful problems in cerebral pathology.

In the estimation of the psychic condition of an individual the chief criteria furnished by the studies of the Kraepelin school are these:¹¹

(1) Determination of the mental *functioning-capacity* (*Leistungsfähigkeit*), represented by the rapidity with which simple mental processes take place. The three chief points here to be taken into account are, (a), perception of sensory impressions, (b), association of mental images, (c), execution of voluntary movements.

(2) Measurement of the effect of *practice*, or the increased functioning-capacity through exercise (*Uebungsfähigkeit*).

(3) Quality of *general memory* or the *permanency* of increased functioning-capacity through exercise, measured after considerable intervals of time (*Uebungsfestigkeit*).

(4) Estimation of the functioning-capacity of the various forms of *specialised memory* as shown by the fixity of sensory impressions, associations and motor sensations.

(5) Effect on the functioning-capacity of the stimulus developed through a period of uninterrupted work, in other words the capacity for *warming up* to a task (*Anregbarkeit*).

(6) Measurement of the degree of *fatigue* (*Ermüdbarkeit*) after long continued work.

^{*} Centralbl. f. Psych. u. Nervenheilk, Jan.-März, 1903.

^{*} Psychol. Bulletin, June 15, 1904.

¹¹ Psychol. Arbeiten, Bd. I, H. i., pp. 63 ff.

(7) Measurement of the capacity for *recuperation* from fatigue or exhaustion (Erholungsfähigkeit).

(8) Determination of the *depth of sleep* at successive intervals during the night.

(9) Measurement of the capacity for resistance to disturbing influences, or of the amount of diminution of the functioning-capacity under the influence of irrelevant sensory impressions, in other words the degree of *divertibility of the attention* (Ablenkbarkeit).

(10) Estimation of the ability to disregard continued disturbing influences through *habituation* to them (Gewöhnungsfähigkeit).

The researches of the Heidelberg School are important not only in the analysis of the factors which bring about abnormal mental states, and in supplying new diagnostic and therapeutic indications to clinical psychiatry; in addition, it is a part of the original plan of Kraepelin that each piece of experimental work should include a discussion of the value of the *personal equation* in influencing the results. With this in view the test-persons in a given series of experiments are separated into groups according to their manner of reaction and the quality of their work thus determined, in short, according to their *functional-mode*, and the characters of the psychic activities of individuals and groups of individuals are defined in so far as the range of the given experiments makes possible. In this way a foundation based on laboratory methods has been laid down for a broad *individual psychology* which is not alone of such inestimable significance in the appreciation of cases of mental alienation, before all, the borderline cases, in showing that an arbitrary *norm* by which mental health or disease may be estimated does not exist; but which plays a capital rôle in the larger question of education, upon the merits and faults of which the sanity of the nation in such great part depends.

In the foregoing pages reference has been made to some of the methods, attainments, limitations and possibilities of the newer psychiatry. In like proportion as the efficiency of our methods of observation has increased, has increased the complexity of the problems to be solved. The goal is not to be reached by the clinician alone, nor by the anatomist and pathologist, nor by the chemist or psychologist alone. All laboring together will still

find before them a hundred years hence a field as limitless as that which confronts the workers of the present generation. But withal it is no mean record which the closing years of the nineteenth century have to present; they have brought it about that our science, instead of being a subordinate, little understood and little cared for branch of knowledge, has become in its many sided developments and relations one of the broadest and most important departments of medicine.

REMARKS UPON INSANITY AND EPILEPSY IN REGARD TO THE DURATION OF LIFE.¹

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Sir William Gowers has already stated, in his opening paper on "Insanity and Epilepsy in relation to Life Assurance," that the need for such an investigation is a definite knowledge based upon facts and that the facts should be numerous; for insurance work is dependent above all things upon a correct "aggregate average" which, as he truly states, can only be obtained by collective investigation.

To some extent such information is furnished by the Tables of summaries from all the asylums and mental hospitals presented in the Report of the Lunacy Commissioners to the Lord Chancellor. What I have to say will be in part the result of my own experience and in part also the deductions from the report referred to.

The problem of life insurance in regard to insanity presents to my mind two absolutely separate and distinct aspects. Firstly, the risk of insuring certified cases—those who are already inmates of some institution or are under "single care," for, Sir William Gowers asks, can an actually insane person be accepted for life insurance upon any terms? Secondly, the risk of insuring any life with the possible chance of insanity or epilepsy occurring at a future period. The answer to the first question depends entirely upon the form of the insanity. The generic term "Insanity," is to me most misleading, for the term includes so many varieties, each with its own life value. It connotes, however, among other things, a higher general mortality than occurs in the sane, but the exact and ideal information as to the general duration of life

¹This paper was the opening of the adjourned discussion upon Sir William Gowers' paper, before the Life Assurance Medical Officers' Association at 11 Chandos Street, Cavendish Square, London, W., on November 2, 1904.

in the different kinds of insanity is still a *desideratum*. If mental states are classified, and as Sir William Gowers states, a classification of our facts is necessary and in his opening address he invited facts as to the risks to life in the various forms of mental unsoundness, what classification are you going to adopt? Without going into detail about the different kinds, based upon causation, age, evolution, or pathology, the one founded upon symptoms appears most acceptable, and is the system adopted for general statistics. Cases of excitement are described as mania, of depression as melancholia, of loss of mental powers as dementia; mental perversion or fixed delusions are referred to as "delusional insanity" and there are moreover general paralysis, epilepsy, and weak-mindedness or idiocy and imbecility. Now, all these forms are received and treated in asylums or mental hospitals and we have fairly definite evidence as to the duration of life in them. The average age of 2085 males admitted during 1903 into the asylums of London was 42 years and the expectation of life at this age is 24 years, making the age at death 66 years, but the average mean age at death of 721 males in the asylums of London during 1903 was 50.7 years, although seven of these were between 85 and 95 years of age. The average deaths at all ages in England and Wales for the ten years ending 1901, was 17.6 per thousand living. For the year 1902 the average death rate was 16.3 per thousand persons living (males 17.4, females 15.2). These figures, of course, include deaths at all ages, and the percentage is naturally raised by including infantile mortality and that of children under 5 years of age, which are very high, amounting to about 55 per thousand living, whereas in the asylums of England and Wales the deaths during the quinquennium 1898-1902, average 98.7 per thousand living in these institutions, and during 1902 they amounted to 105.15 per thousand living among the certified insane (119.0 males, 91.3 females), a ratio six times as high as that which occurs in the ordinary population, although the insane population is mostly over 20 years of age when admitted. Indeed it is evident from the following table that the death rate among the insane in institutions during certain age periods, is exceedingly high when compared with corresponding age periods in the general population.

TABLE SHOWING: I, RATIO PER 1000 OF DEATHS TO PATIENTS LIVING IN ASYLUMS AND II, RATIO PER 1000 OF DEATHS IN THE WHOLE POPULATION FOR 1903 AND ESTIMATED FOR THE MIDDLE OF THE YEAR AT VARIOUS AGES.

Age	Under 5		5-9		10-14		15-19		20-24		25-34		35-44		45-54		55-64		65-74		75-84		85 and Upwards		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I...	•	•	68.0	24.0	54.8	65.6	71.6	80.5	68.8	70.8	79.0	63.8	111.2	65.8	102.7	63.8	127.1	85.0	106.8	168.4	416.1	308.9	503.8	548.7	116.4	90
II.	53.7	44.5	3.9	4.1	2.2	2.3	3.3	3.1	4.5	3.8	6.3	5.3	10.5	8.5	13.0	13.6	33.6	26.1	67.8	56.6	133.4	123.0	274.7	239.1	17.4	15.3

One is justified, therefore, in looking upon the insane as a class marked by considerable physical inferiority and lowered vital resistance to disease as is significantly shown by these high death rates. There is, however, included among the various forms of mental diseases, one which stand out as particularly incurable and hitherto unyielding to medical treatment, which causes in some institutions nearly 33% of all the deaths, and last year in all the asylums of England and Wales caused nearly 25% of the total male deaths. This is general paralysis of the insane, which occurs mostly in men (82% of all cases of general paralysis occur in men) and forms 11% of all cases of mental disease among males who are admitted into asylums, the age of greatest incidence being between 35 and 44 years, and the duration of residence in 331 male cases received into Claybury in whom the diagnosis was verified by post mortem examination, was 1 year and 4 months. It is more than three times as often met with in married men as among single men or widowers. It is a great question and I will say no more about it here, except to express surprise that any insurance office in existence should take such cases, as even long before the disease itself is evident, there are subtle symptoms of its onset and development which are possible of recognition and which should not escape a vigilant examination. Some astonishment has been expressed that in the tables of Dr. Claud Muirhead only 13% of all the deaths were due to insanity, but the incidence of insanity among males in the general population is only .062% in any year and in the statistics quoted, the percentage is more than double this average. Among males over 25 years of age, the age probably of the greatest number of assurance presentations, the incidence of insanity is only .12% and even this is below that quoted by Dr. Muirhead. I myself confess surprise that in the 12 cases reported, it is expressly stated there was in the family history no indication of a neurotic tendency.

As Sir William Gowers points out, a history of insanity is not infrequent among ordinary cases, for he states that not less than 2% of cases met with in ordinary practice have such a history and there are few families that are untainted with a hereditary history of some nervous breakdown. In the medical statement of many insurance societies the question is never asked whether there is a history of ancestral insanity or neurosis. The question is

only asked as to a history of personal insanity and unless the history of insanity is wilfully suppressed—and we know only too well that it frequently is—I am totally unable to account for its absence in Dr. Muirhead's statistics. Is it possible also that the incidence of insanity may be much higher than Dr. Muirhead himself states, and that he has taken the certificate of death alone as furnishing information of insanity in the cases that have died? If so, we may well understand the few cases recorded, although this proportion taken for the general population is high. The death certificate very rarely states a death to be from mental causes, even though the patient die in an asylum for the insane, for the Lunacy Commissioners accept only one cause of death, and the bodily disease is generally stated without reference to the mental condition. Furthermore, the feeling of the friends is taken into consideration, and any possible stigma is purposely avoided in the death certificate. These are certainly factors to be considered in dealing with the possible deaths from insanity, although the statistics referred to have been so carefully and ably compiled that it seems presumptuous of me to criticize them. What do we see in regard to this question of a neurotic history? Of all cases of insanity admitted into asylums of England and Wales, a neurotic heredity is present in 22%, and in those with a suicidal tendency it occurs twice as often. Heredity, based upon the fact that like produces like, is the great conservative force of nature, which, whilst eliminating accidental peculiarities, always tends to the preservation of the normal type. In insanity, heredity counts for much, as the experience of any asylum physician will record. Personally, I look upon insanity as a faulty or a vicious organization, as a degeneration of the constitution, much oftener by heredity than acquired, which latter rarely occurs. In estimating heredity, it is impossible not to notice that in the histories of families certain diseases appear to occur interchangeably with insanity and which may be regarded as hereditary equivalents of insanity. I have often seen epilepsy, hysteria, alcoholism, chorea and hypochondriasis appear interchangeably with insanity, and I have noticed one disease in particular, viz: phthisis. This disease is a more frequent cause of death in asylums than is generally accepted by medical men. In 1903, phthisis was responsible for 16.3% of all the deaths in institutions for the insane. In the general popula-

tion and for all ages it is not half this ratio. The tendency to phthisis may, I think—and it is only my personal opinion—be looked upon as a tendency to insanity; conversely also, I look upon insanity as constituting a heredity for phthisis. Personally and from extensive experience, which I can support with statistics, I would look upon phthisis in one parent and a neurosis, such as a previous attack of insanity, in another as ground for caution in accepting a life for assurance; as a convergent weakness, which a heredity of this kind implies, constitutes a strong force towards the deterioration of the offspring.

As to the other varieties of insanity, that form called “delusional insanity,” characterized by systematized delusions, i. e., by a tendency to reason out a cause for the persecution; or cases of fixed ideas (the so-called “cranks”) do not in my opinion, tend to shorten life. Such insanity is four times more common among the private (i. e., the assurable) class than among the poorer, and is rarely followed by dementia. Every physician knows this type by the woven plot of logical reflections. It is an insanity of men—often of able men—mostly between the ages of 25 and 35, the period of greatest functional mental activity. Every asylum contains a large number of such chronic cases and some at advanced years.

Congenital imbecility or chronic weak-mindedness is twice as often met with among the poorer (i. e., non-assuring) class. Whatever may be thought of the physical development of such cases, my experience at Earlswood and elsewhere leads me to look upon these as of deficient vigor and vitality. They are not long-lived and they not infrequently die from gradual decay, at from 40 to 50 years, without any definite disease to account for death, much as do some from 60 to 65 with the average mental equipment. The average age at death, for several years, of cases admitted into Earlswood, whose organs were described as “healthy” on admission, was 25 years. The Earlswood Asylum, a private mental hospital, formerly received as “life presentations” able-bodied weak-minded persons who had been trained to be useful, and statistics in regard to them are very valuable. I have been enabled by the courtesy of Dr. Charles Caldecott, the medical superintendent of Earlswood Asylum to insert the following tables in regard to the duration of life in an institution of

exceptionally favorable hygienic and other surroundings of the chronic weak-minded (congenital) class.

TABLE B.

(48) "LIFE" PATIENTS WHO HAVE DIED AT EARLSWOOD ASYLUM.

Total number 48.

Average age on admission	16.8 years
" " at death	46.8 "
" life in Asylum	29.7 "
Oldest admission	33 "
Youngest "	4 "
Oldest death	71 "
Youngest death	10 "
Longest life in Asylum	54 "
Shortest " " "	1 "

Lived in Asylum over 50 years.....	2
" " " from 40 to 50 years.....	8
" " " " 30 to 40 "	15
" " " " 20 to 30 "	14
" " " " 10 to 20 "	5
" " " " 0 to 10 "	4

—
Total 48

Died in Asylum over 70 years of age.....	1
" " " between 60 and 70 years of age.....	8
" " " " 50 and 60 " " "	11
" " " " 40 and 50 " " "	14
" " " " 30 and 40 " " "	8
" " " " 20 and 30 " " "	4
" " " " 10 and 20 " " "	2
" " " " 0 and 10 " " "	0

—
Total 48

TABLE C.

(108) "LIFE" PATIENTS STILL RESIDENT IN EARLSWOOD ASYLUM.

Living in Asylum over 70 years of age.....	1
" " " between 60 and 70 years old....	14
" " " " 50 and 60 " "	39
" " " " 40 and 50 " "	35
" " " " 30 and 40 " "	18
" " " " 0 and 1 " "	1

—
108

	M	F
Oldest age amongst life patients.....	69 years	74 years
Youngest age amongst life patients.....	34 "	24 "
Average age amongst life patients.....	50.3 "	49.7 "
Longest time in Asylum amongst life patients.....	56 "	54 "
Shortest time in Asylum amongst life patients.....	13 "	13 "
Average time in Asylum amongst life patients.....	36.1 "	36.3 "

I am of opinion, based upon statistics, that chronic weak-mindedness indicates a lowered vitality.

No one would, I am certain, insure any case of acute insanity until the exacerbation had remitted, as the risk to life is great, whether the attack be acute mania or acute melancholia. If the attack be a brief simple psychosis, the result of a single overwhelming powerful cause and there is no history of a degenerate inheritance, then the chance of a recurrence is less. All cases of recurring insanity imply unexpected acute exacerbations and they are unfavorable lives. Melancholia is more frequently met with among males of the assurable than among the poorer classes (as 30 to 23), and it indicates a greater mental reduction than occurs with mania. In view of possible suicide, personal depression is an important factor and such a life should be rated high. Acute mania and acute melancholia appear most often between 25 and 34 years. All acute insanities imply some secondary or consequent dementia, a state which means a greater liability to low forms of inflammation, catarrhal lung diseases and phthisis, as also to diarrhea and mal-nutrition. How unfavorable insanity—speaking generally—is to the duration of life is seen from the statistics of ages at admission and death already quoted from the asylums of London. Next as to suicides, which are a serious loss to insurance societies. In Dr. Muirhead's statistics, 127 cases out of 9163 male deaths were due to suicide, an average of 14.1 per 1000 deaths or 1 for every 72 deaths, at an average age of 47 years, and the greatest number of suicides in any single year occurred during the first year's insurance. These statistics cover a period of 21 years, which yield a rate of 6 per year for 436 average deaths. They closely approximate those of another insurance society, the "Clerical Medical and General," which the actuary, Mr. Whittall, has kindly furnished me with. In this society, out of 1576 male deaths in the 7 years ending June 30, 1904, there

were 23 suicides, 1 to every 68 deaths, a proportion of 14.6 per 1000 deaths, which is slightly higher than that of the "Scottish Widows." Of these suicides 4 were in the first five years of assurance. The proportion of suicides at all ages in the total population is only about 90 per million living. If male deaths alone are taken (285,618 in 1901), the proportion of male suicides (total 1796 in 1901) at all ages to deaths at all ages is 1 suicide to every 159 male deaths or 6.3 per thousand deaths. If again, males between the ages of 45 and 54 are taken, we find that in 1902 in England and Wales, with an estimated population of 1,413,055 between the ages of 45 and 54 years, the male death rate was 18.0 per thousand living, yielding a total of 25,435 male deaths. During the same year 572 male suicides occurred for the same age period—a rate of one suicide for every 44 deaths, or a proportion of 23 per thousand deaths, so that there is a lower suicide rate among the insured than there is among the general population for the corresponding age periods—45 to 54 years. Now, of all forms of mental affection that associated with suicide is the most often inherited and the taint probably appears in the offspring at about the same age that it appeared in the parent. Several families are known to those of us whose work is among the insane, in whom the grandfather, father and son all committed suicide at about the same age. The family history is therefore most necessary. It is estimated that 21% of all male cases annually admitted into asylums show a suicidal tendency, but the occurrence of actual suicide is exceedingly rare in asylums and mental hospitals. During 1903 only a total of 28 suicides occurred among 9287 deaths, one to every 331 deaths or a proportion of only 3 per thousand of the total deaths in the two sexes.

Of the 1708 males admitted under my care into Claybury in seven years, suicidal tendencies occurred in 27% or 472 cases. In 200 of these a definite history was obtained as to heredity, showing a direct history of insanity in the ancestors in 87 cases, viz., 43.5%, and in a slightly greater proportion on the mother's side (48 to 39). There was a collateral insanity in 55 cases—27.5%—so that a direct or collateral heredity was disclosed in no less than 70% of all the cases. Furthermore, a heredity of phthisis was ascertained to exist in 29%—in 34 out of 116 cases of insanity with suicidal tendency in which the inquiry as to phthisis

TABLE D.
200 Suicidal Cases.—Table of Heredity.—*Direct*.*

		Insan. alone.	History of Insanity.					Pat. Total.	Mat. Total.	Combined.
			With Suicide.	With Drink.	With Paral.	With Phth.	With Epilepsy.			
Great Grandfather.....	{ Pat. Mat.	1	::	::	::		::	::	1	1
Great Grandmother	{ Pat. Mat.	1	::	::	::		::	::	1	1
Grandfather	{ Pat. Mat.	1	1	1	::		::	3	3	3
Grandmother	{ Pat. Mat.	1	1	::	::		1	3	3	3
"Father's side".....		7	..	1	..	See Tables F and G.	..	3	..	..
"Mother's side".....		10	1	1	1		2	..	15	23
Father		11	5	3	5		..	24	..	..
Mother		15	3	2	3		..	..	23	47
		51	13	9	9		3	27	43	85
								27	43	

TABLE E.
200 Suicidal Cases.—Table of Heredity.—*Collateral*.*

		Insan. alone.	History of Insanity.					Pat. Total.	Mat. Total.	Not Disting'd Total.	Combined.
			With Suicide.	With Drink.	With Paral.	With Phth.	With Epilepsy.				
Uncle.....	{ Pat..... Mat..... Not Disting.	5 3 1	:: 3 1	::	:: .. 1			5	3 3 ..	.. .. 3	.. 16 ..
Aunt.....	{ Pat..... Mat..... Not Disting.	12 8 7	.. .. ..	1 1 ..	.. .. ..			13	9 .. ..	.. 7 ..	.. 23 ..
Cousin.....	{ Pat..... Mat..... Not Disting.	3 3 4	.. .. ..	.. .. ..	.. .. ..			3	3 .. ..	.. 4 ..	.. 10 ..
Brother.....		21	2	3	..	See Tables F and G.	3	..	..	..	..
Sister		23	2	2	..		2	..	..	..	..
		93	7	7	1		5	21	20	14	113
								21	20	14	

* In many cases the heredity was both direct and collateral.

TABLE F.

Of 200 cases of so-called Suicidal Insanity a history of *Hereditary Phthisis* was acknowledged in 34 and denied in 82 cases (= 116). The two following tables show the direct and collateral relations of Phthisis in the 84.*

DIRECT.		Phth. Alone.	History of Phthisis.					Pat. Total.	Mat. Total.	Combined.
			With Insan.	With Suicide.	With Drink.	With Paral.	With Epilepsy.			
Grandfather.....	{ Pat. .. Mat. ..	..	2	..	1	..	..	1	3	3
Grandmother.....	{ Pat. .. Mat. ..	..	2	1	..	..	..	1	3	3
"Father's side".....		1	4	..	4	..	..	9	..	..
"Mother's side".....		3	2	..	3	..	..	..	8	17
Father.....		..	3	2	3	..	..	8	..	..
Mother.....		2	5	..	1	1	..	..	9	17
		6	18	3	12	1	..			40
								19	21	

TABLE G.
(as above).

COLLATERAL.		Phth. Alone.	History of Phthisis.					Pat. Total.	Mat. Total.	Combined.
			With Insan.	With Suicide.	With Drink.	With Paral.	With Epilepsy.			
Uncle.....	{ Pat. .. Mat. ..	..	2	1	..	1	1	5	..	5
Aunt.....	{ Pat. .. Mat. ..	..	3	..	..	..	..	3	5	8
Cousin.....	{ Pat. .. Mat. ..	..	1	..	..	..	..	1	..	1
Brother.....		2	5	..	..	..	..	..	..	7
Sister.....		3	5	..	..	1	..	..	..	9
		5	21	1	..	2	1			30
								9	5	

* In some cases the history of Phthisis was both direct and collateral.

was answered. Moreover, a heredity of insanity associated either with epilepsy, alcoholism, suicide, or some form of paralysis was met with in a not inconsiderable number, viz., 17% as in Table G.

Now is there such a thing as sane suicide? In my opinion there never can be a sufficient reason for self-destruction and there is no special form of insanity characterized by a lust for self sacrifice. Unless the reason is destroyed by disease, motives act in the insane precisely as they do in the sane, and shame, pain, or misery and remorse may overcome a weak will in the one as in the other. If the causes of suicide are analysed they are often of trivial origin and either without motive, or only an imaginary one. These causes may roughly be classed (1) as selfish or egotistic, (2) altruistic, and (3) those which seem to admit of no definite grouping and to be under no classification. The reversal of the instinct of self-preservation is no insurance suicide, but is a disease brought on not infrequently by slight psychopathic conditions such as neurasthenia, caused by worry, overwork or such nerve depressants as the influenza poison, or even ordinary ill health. Although suicide is more common among the insane, it is met with more among insane men than women, who nevertheless are the more numerous of the two sexes in the insane. On the other hand, those countries with the least number of insane persons often have the most suicide, and the reverse is also the case, e. g., the Jews are very liable to insanity, but have few suicides. There is no doubt that suicide has of late tended greatly to increase, and as man advances in years the proportion of suicides becomes higher, the maximum per thousand living occurring in men over 65 years of age. It is important, therefore, that its possibility should be anticipated. In my experience the ages of greatest incidence for "suicidal" insanity were between 25 and 30 years—the period of greatest mental development and expansion—and then between 35 and 40—the years in which the fruit of that expansion was maturing. As to the age, viz., 47 years, which was the average of the "Scottish Widows" suicides, it is an age in which, as Bevan Lewis states, the achievement of the struggle for existence has been decided, one in which the plans of action have borne fruit and one at which man's weight and influence as a social unit have been established. At this age he is either made or marred; he is no longer in the making, and there is little chance

in the case of failure, of a further readjustment of the balance of action. Life is at this period, successful or the reverse. Moreover, it is at this age that inherited faculties tend to assert their supremacy, and that the feeble and indifferent organizations succumb from the disappointment of an unequal competition.

I now come to Epilepsy, and Sir William Gowers' special experience is so unique in regard to this disease that I shall refer mainly to the epileptic insane. It is estimated that the male population in the middle of 1903 in England and Wales was 16,183,344, and that there is one male epileptic for every 1000 males living, yielding an approximate total of 16,183 male epileptics of whom about 1 in 18 become insane. In eight of the United States of America the proportion—after special inquiries—is estimated to be twice as high, viz., 1 epileptic to 500 persons living (Peterson). In England and Wales, male epileptics constitutes 9.9% of all males admitted annually into asylums, epilepsy and insanity occurring more than three times as often among the poorer—the non-assurable class—than among the richer classes, but in asylums alone the male deaths from epilepsy (252 in 1903), constitutes only 5.2% of the total male deaths (4831 in 1903). The deaths from epilepsy in Dr. Muirhead's statistics were 4.3% per 1000 deaths, the average in the general population is 4.7 per thousand deaths at all ages. The average male age at death from epilepsy and insanity in asylums was 40.5 years for 1903. The average age of all male deaths in asylums was 50 years in 1903—nearly ten years higher. Out of 373 male epileptics admitted in ten years into Claybury Asylum, 121 have died, i. e., 32%, and of the deaths 31.4% died from epilepsy alone, i. e., exhaustion in consequence of fits. The average age at death of these was 38.5 years. Dr. Alexander has very kindly given me his experience for the last 50 years ending August, 1904, in Hanwell Asylum, and he records the deaths of 171 males from epilepsy alone at an average age of 37.7 years. There is not a shadow of a doubt but that epilepsy shortens life. (1) either by its effects alone, or (2) by its general lowering of the vitality. Spratling states that in 150 cases, deaths occurred at an average of 29.46 years. Sir William Gower's caution as to accepting any proposer who actually suffers from epilepsy shows how he realizes the risks. I believe, however, that when admitted into asylums they are better lives than outside, as the risks from

choking, suffocating in bed at night during a fit, serious falls and the consequences of low inflammation from impaired circulation after repeated attacks are less. All these are best guarded against in institutions and there are many cases of epilepsy at advanced ages in asylums whose fits began after middle life. In accepting any "proposer," however, I should be very guarded as to "faints" or giddiness, even when no cardiac, renal or circulatory impairment is present.

Lastly as to syphilis. Its presence in the history of general paralysis is accepted as a necessary antecedent. In all cases of primary syphilis—as Fournier states and Sir Alfred Cooper also agrees—not more than 20% ever suffer from any tertiary symptoms. Mr. Jonathan Hutchinson, Jr., states that not more than 10% do so. Of those who suffer from tertiary symptoms not more than 50% of these suffer from nervous symptoms, parasyphilitic or otherwise (at the most 10 in every 100 cases of primary syphilis) and of these again not more than 25% suffer from general paralysis or locomotor ataxia, so that at the outside only 2.5%, possibly only 1% of those who have contracted syphilis ever suffer from general paralysis or locomotor ataxia. Mr. Lockwood states that about 1% only ever get such late manifestations as gummata with nervous symptoms, ataxia or general paralysis, atheroma choroiditis or retinitis. The period at which general paralysis most generally manifests itself is 15 to 20 years after the first symptoms which are often impossible to trace. I would be very guarded about any life that had contracted syphilis 20 years ago and whose work involved stress of any kind, who was in impaired health, in whom there was the slightest suspicion of alcohol, or whose occupation—such as that of a soldier or a sailor—implied convivial tendencies and who moreover had a psychopathic history. Transient aphasia in persons who have had syphilis is an exceedingly evil omen.

With regard to the risk of an ordinary life becoming insane, it is in forming a conclusion thereon that the instinct and the experience of the general physician will be the most reliable guides, and, as Sir William Gowers truly states, the greater his general experience the better are his assurance judgments. I deplore the fact—and it is a fact—that less consideration is given to the so-called "temperament" of our patients than was cus-

tomary with the more ancient physicians. Although the phase "humoral pathology" conveys little to one's mind in the present day, our ideas in regard to immunity and the reaction to toxins are derived from some appreciation of these "humours." The factor of personal depression, the so-called atrabilious temperament when associated with hereditary insanity or neurosis, may mean suicide and the risks of a male between the ages of 25 and 55 becoming insane are 2.3 per thousand lives. It does not appear high, but failure to appreciate the risk may imply a considerable loss to an insurance society. We accept fully the heredity of insanity and other nervous diseases and we know that insanity shortens life. Every medical inquiry form should therefore ascertain the direct ancestry and the collateral history as to insanity or suicide. It is the chief guide and the strongest evidence of a like possible taint in any proposer. Even if there be insanity in a direct ancestor the odds are against insanity in the immediate offspring, for nature ever tends to the normal type or to an average. Nevertheless there is a risk, and this risk should be met by an added premium. If there be no insanity in the ancestor but yet in a collateral, there is also a risk which should be similarly met. If insanity is not established the family history is the only prediction that it may be coming. Stigmata of physical deterioration have to be considered in any applicant and their values also determined. Sir William Gowers has already dealt so fully and so clearly with the whole subject that there is little left to be added. The laws of health cannot be infringed with impunity, least so, by him whose ancestral chain has already shown a weak link.

CONCLUSION.

(1) Insanity *per se* is inimical to life. It is a deterioration mental and physical. It causes more deaths in every quinquennium among the certified insane in asylums than in corresponding periods among the general population. Cases least affected are those holding fixed ideas, sometimes called paranoiacs or persons suffering from delusional insanity as are also those in whom an acute attack of insanity has left moderate but chronic weak-mindedness. Congenital weak-mindedness diminishes the expectation of life.

(2) The most powerful and the most frequent antecedent of insanity and of epilepsy is either ancestral insanity or epilepsy.

(3) All medical forms of inquiry used in insurance offices should ask whether there is a history of ancestral insanity (parents and grandparents) and collaterals (uncles and aunts).

(4) That a suicidal tendency is eminently heritable—often appearing at the same age in the offspring as in the ancestor.

(5) That suicides in asylums occur less frequently by one-half than in the general population during the period of greatest liability.

(6) That phthisis and insanity are strong converging factors towards insanity.

(7) That epilepsy shortens life—more so by an average of ten years—than insanity.

(8) That antecedent syphilis in many assurable cases cannot be definitely ascertained either by admission of the fact or by its sequelæ and that general paralysis occurs not more often than in about 1% of all cases which have contracted syphilis.

A CASE OF GLIOMA OF THE PINEAL REGION.

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Following is a case of psammoma of the pineal region. A study of the cell-picture and of the intercellular contents has aligned the tumor with the gliomata rather than with the sarcomata. The cell-picture varies locally within the growth, presents unusual multinucleate structures, and is altogether more multi-form than is the rule with glioma. Clinically the case is quite undefined, but scarcely more so perhaps than most cases of the pineal-quadrigeminal group of cerebral tumors.

I. CLINICAL HISTORY.

P. H., an Irishman of forty-four years, was transferred March 14, 1904, from the Lawrence Almshouse to the Danvers Insane Hospital. He was fairly well nourished, but oldish-looking and weakly. He was unable to stand or walk alone. His gait, when supported, was feeble, tremulous, and somewhat propulsive in character; the left leg dragged a little. There was a slight tremor of the hands; the left hand grasp was a little weaker than the right. There was a coarse tremor of the tongue. Of the reflexes, the knee-jerks were much increased; and the pupils, which were small and equal, failed to react to light. The Achilles, triceps, and wrist reflexes were present. The sensations were normal. The apex-beat was visible in the sixth interspace one inch outside the nipple-line; there was a soft systolic murmur at the apex. The rest of the physical examination was negative, except for a degree of peripheral arteriosclerosis.

The patient's manner was agreeable, and he conversed willingly with the examiner. His answers to questions, though often incorrect, were as a rule relevant. His speech was somewhat thick. He was disoriented for time and only partially oriented for place. He was deficient in school knowledge and in ability at simple

calculation. The hand-writing was very defective. His memory was unreliable. There was no evidence of hallucinations, delusions, or romancing tendency.

The patient was under observation until death, May 5, 1904, and, until a few days before death, little change was noted in him. He remained bed-ridden and untidy. During the first days of May he developed a temperature varying from 102 to 104.2, and relapsed into a comatose or semi-comatose condition, varied by general convulsions.

Little as to his antecedents could be discovered. He had been a worker in the mill-towns in northeastern Massachusetts since his emigration from Ireland in 1890. His family and personal history was negative. He used alcohol to some degree. His inability to walk dated from what he termed a "shock" seventeen months before his death.

I am indebted for the above notes to Drs. H. W. Mitchell and H. M. Swift, physicians to the Danvers Insane Hospital.

CLINICAL SUMMARY.

An Irish mill-worker of forty-four years, with moderate arteriosclerosis. Mental changes of unknown onset and duration (patient an almshouse transfer): disorientation, defective memory, and some general deficiency. Inability to walk unsupported, (dating from a "shock" seventeen months before death) and weakness of legs, with slight dragging of left leg. Tremor of hands, with somewhat weaker grasp on left side. Stiff pupils. Increased knee-jerks. Signs and symptoms stationary. Death in the eighth week of hospital observation, from an intercurrent pneumonia.

II. GROSS FINDINGS.

Body well built and well nourished. Skin pale. Face pitted as from variola. Deep cicatrices on outer surface of right thigh and leg. Pupils equal, 5 mm. in diameter.

Cavities of trunk not remarkable, except that upper right pleura is effaced.

Heart.—Wt. 400 gms. Ecchymoses beneath epicardium, particularly over right ventricle. Valves of normal appearance, measure: Tricuspid valve 14.0 cm., pulmonary valve 9.2 cm.,

mitral valve 11.5 cm., aortic valve 9.0 cm. Muscle-substance dull colored and flabby. Left ventricle measures 1.5 cm., right ventricle 0.3 cm. in thickness.

Lungs.—Left lung edematous, posteriorly shows post mortem congestion. Right upper lobe solid and red-gray with a finely granular surface of section and numerous vascular points. The parietal pleura and subpleural fat are removed with the lung which is overlaid with a thin layer of fibrin. Lower lobes edematous and injected.

Spleen.—Wt. 140 gms. Capsule normal. Substance soft and pulpy, obscuring trabeculae and Malpighian bodies which are enlarged.

Liver.—Wt. 1640 gms. Section surface broadly mottled with gray and reddish brown. There is a finer mottling with dull, dark red and lighter reddish-gray, which corresponds with the lobules. Substance friable. *Gall Bladder* normal.

Kidneys.—Wt. 590 gms. (right 370; left 220). Strip readily. Subcapsular surface finely irregular but smooth and glistening. Cortex slightly wider than normal and opaque yellowish-gray in color. Conspicuous injection. Glomeruli very distinct. Three subcapsular cysts, 2-5 cm. in diameter, in right kidney.

Other organs and tissues of trunk and extremities not remarkable. The *Aorta* shows slight sclerosis.

Head.—*Calvarium* shows thin tables and soft, deep red diploe. *Dura Mater* tense, non-adherent. *Sinuses* normal. *Arachnoidal Villi* moderately developed. *Pia Mater* delicate and clear over convexity, but over base and cisterna cloudy. About the superficial origins of the cranial nerves and along upper margin of pons there is an increase of connective tissue. *Convolution*s flattened and velvety. Section through the stem at the anterior border of the pons shows a *Mass* springing from and continuous with the pineal gland, lying in third ventricle and aqueduct of Sylvius. The mass is soft and reddish-gray; the free surfaces are granular and hummocky; the other surfaces are moulded smooth by the ventricle and aqueduct walls. Farther sections, after hardening in formalin, show that the mass begins posteriorly in substance resembling the pineal body, gray and grit-containing, and stretches forward, mainly to the right of the median line, to a point just anterior to the gray commissure. The mass lies free

in the third ventricle or presents here and there light adhesions with the ependyma. Posteriorly the mass bulges beneath the splenium of the corpus callosum and is rather firmly adherent to the pia as far back as the groove between the anterior and the posterior corpora quadrigemina. The mass is of fairly homogeneous appearance. The part continuous with pineal body has an injected border.

The lateral *Ventricles* are symmetrically dilated.

The canal below the mass is not evident.

The autopsy was performed by Dr. A. M. Barrett, to whom I am indebted for permission to report the case, for the materials of the above description, and for numerous suggestions.

ANATOMICAL SUMMARY.

Death from right upper lobar pneumonia, with fibrinous pleuritis, and acute splenitis.

Moderate arteriosclerosis.

Chronic diffuse nephritis.

Hypertrophy and dilatation of heart.

Neoplasm springing from pineal gland, occupying posterior half of third ventricle, anterior orifice of aqueduct of Sylvius, and the space beneath velum interpositum as far back as posterior corpora quadrigemina. (Figs. 1 and 2.)

Dilatation of lateral ventricles of brain with internal hydrocephalus and flattening of cerebral convolutions.

Chronic fibrous leptomeningitis at the base of the brain.

III. MICROSCOPICAL FINDINGS.

Cultures from the trunk organs proved sterile, except from the *Lungs* which contained: right, staphylococcus pyogenes aureus and pneumococcus; left, staphylococcus pyogenes aureus, pneumococcus (?), and a few colonies of a bacillus of the pseudodiphtheria group.

Microscopical examination of the organs of the trunk chiefly confirmed the gross diagnoses. The pneumonic lung shows an exudate mainly purulent, with considerable edema, small hemorrhages and numerous bacteria, both cocci and bacilli, the latter resembling the bacilli found in culture from the left lung. The heart shows brown atrophy. There is no great evidence of

general arteriosclerosis. The kidneys show cloudy swelling and slight fibrous overgrowth in some foci of the cortex with atrophy of a few glomeruli. The liver shows a very mild grade of portal cirrhosis.

The finer structure of the tumor was studied in various regions by a number of methods and was found to differ appreciably on passing from the line of origin to the free-hanging intraventricular parts. The tissue throughout is supplied with well-formed vessels, and there is nowhere any notable hemorrhage or necrosis.

The most striking thing in the microscopical picture is the great number of lime deposits, which range in size from a few micra to above a millimeter in diameter, exhibit in places a roughly concentric layering, and are surrounded by neuroglia fibrillæ.

The deposits, when teased out from the tumor and treated with dilute HCL, evolve bubbles of gas. Sheaves of acicular gypsum crystals form on treatment with dilute H_2SO_4 . The distribution of the lime seems to be characteristic in that, on passing toward the outlying parts of the tumor, fewer and smaller masses appear. No masses are detectable in the plug of tumor which has lodged in the aqueduct of Sylvius, and very little lime can be found in the mass which fills the third ventricle.

The tumor is everywhere rich in cells, but in the outlying and intraventricular parts exhibits very little intercellular substance of any sort. Nevertheless, in portions of the tumor well-penetrated by the fixative (formaldehyde and Zenker's fluid were used), a few fibrillæ can be demonstrated by various methods. The fibrillæ are demonstrable in great quantities in the cell-masses near the line of attachment of the tumor. They are fine and of fairly even diameter, long, and smoothly curving, and enclose the cells in a fashion typical for neuroglia fibrillæ. They surround the lime deposits in some cases quite smoothly and evenly (Fig. 5), but there is never any heaping-up of coarse fibrillæ about the masses such as may be found in the normal pineal body of the adult about the similar deposits there laid down (Fig. 6). The fibrillæ can be brought out by Weigert's neuroglia stain and by Mallory's phosphotungstic-haematein stain for neuroglia. They stain like neuroglia fibrillæ with Mallory's aniline blue stain for connective tissue.

The cell picture is multiform. Corresponding with the devel-

opment of the fibrillæ there are numerous cells in the tumor which somewhat closely resemble the active neuroglia cells often found in the cortex beneath the pia mater, or elsewhere in or about cortical lesions. In some cases the fibrillæ lie in apposition with processes of the cell body or in apparent continuity therewith. The number of the astrocyte forms is, however, relatively low.

More characteristic is a multiformity and irregularity in size of cell and nucleus which offhand suggests a classification of the tumor with the sarcomata. The greater portion of the tumor is composed of cell-masses which, were it not for very sparing fibrillæ reacting like neuroglia fibrillæ, would readily warrant the diagnosis of sarcoma. The cells are small; the cell body slight; the nuclei range from the size of lymphocyte nuclei to twice or three times as large. The smaller nuclei are spherical; the larger ones irregularly rounded or oval. The nuclei have well-marked outer borders and one to several nodal points of deeply staining chromatin centrally placed. In places are larger cells with four or five peripheral nuclei, oval with tips touching or overriding. The central cytoplasm of these structures is hyaline. There is a suggestion of central dots in a few such structures. In the portion of tumor described above no mitoses are demonstrable.

In some areas, however, not only mitoses but also very numerous multinucleate cells occur. In these areas, which are not frequent and run irregularly through the middle portion of the tumor, the tissue is more open and has fewer well-formed vessels. The structures regarded as mitoses are highly convoluted, deeply staining, and voluminous, occupying spaces as large as many of the multinucleate cells. Besides the mitoses are numerous cells with irregular nuclear forms. The nuclei are multilobate or actually multiple. The lobes or separate nuclear elements are of various size, and are sometimes drawn into bizarre or even ameboid shapes. One cell of this group, measuring 65×45 micra, shows five large, peripherally disposed nuclei connected by smoothly tapering bridges, which radiate out from a center (Fig. 7). This sort of structure is approached in several other examples, wherein pale bands are set as if on the stretch between nuclear lobes or elements, and are differentiated from the rest of the cytoplasm chiefly by optical characters.

SUMMARY OF MICROSCOPIC FINDINGS.

Lobar pneumonia. Brown atrophy of heart. Slight chronic interstitial nephritis and hepatitis.

Psammoma of pineal region: New growth well supplied with vessels, without hemorrhage or necrosis. Lime-deposits surrounded by neuroglia fibrillæ. Variable content of fibrillary intercellular substance reacting like neuroglia fibrillæ. Cell-picture various: Astrocytes, smaller and larger cells resembling those of sarcoma, mitoses, large cells with multilobate, bizarre, and multiple nuclei.

IV. REMARKS.

There are in the literature somewhat over fifty accessible observations upon tumors (and cysts) arising in the pineal region. Of these a few only relate expressly to glioma or gliosarcoma. No plates accompany these accounts, which in the main antedate the neuroglia knowledge of the last decade; and there is no means of divining the intercellular structure from descriptions of cell-pictures which fit the diagnosis equally of glioma and of sarcoma. It is nevertheless probable that a number of these cases were truly cases of pineal glioma and that further undoubted cases will be recorded if interest can be stretched to include a differentiation of the intercellular substances. It is moreover plain that, if there be a type of psammoma related to the sarcomata or endotheliomata, there exists in any event also a type of sand tumor belonging to the gliomata.

EXPLANATION OF FIGURES.

FIG. 1.—Frontal section 8 cm. behind anterior pole. Note flattening of gyri, dilatation of lateral ventricles, and tumor in third ventricle.

FIG. 2.—Section shows posterior commissure in oblique section, with third ventricle above and Sylvian aqueduct below, both occupied by a continuous tumor mass.

FIG. 3.—Low-power view of tumor against the buckling wall of Sylvian aqueduct.

FIG. 4.—Low-power view of tumor showing masses and space occupied by large mass of lime deposit. Layer of condensed neuroglia below.

FIG. 5.—750 diameters. Detail from tumor showing neuroglia fibrillæ around lime deposit.

FIG. 6.—750 diameters. Detail from adult pineal body showing coarse neuroglia fibrillæ amongst lime deposits.

FIG. 7.—750 diameters. Bizarre multinucleate cell from tumor.

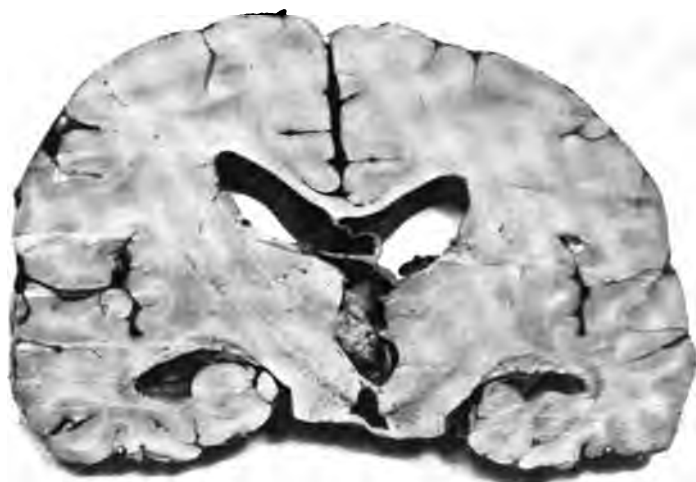


FIG. 1.



FIG. 2.

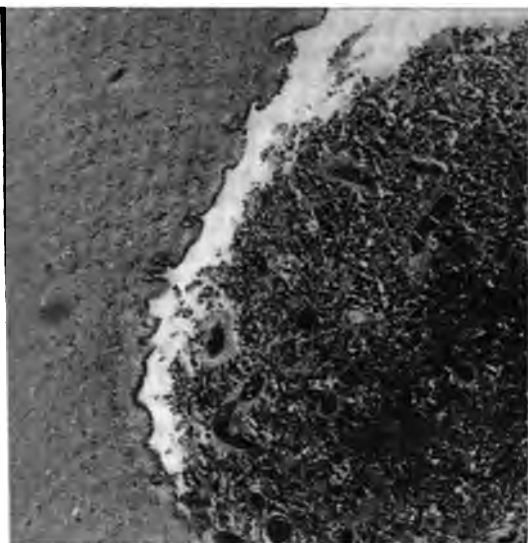


FIG. 3.

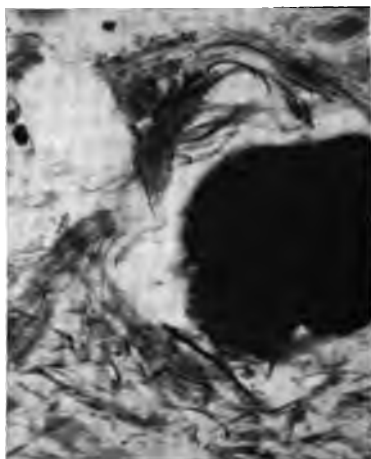


FIG. 5.

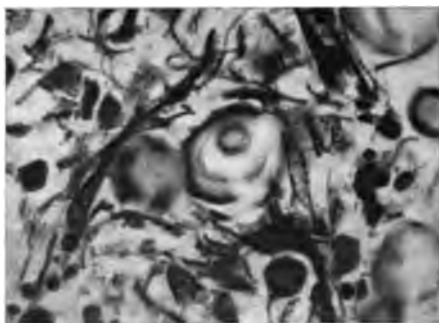


FIG. 6.

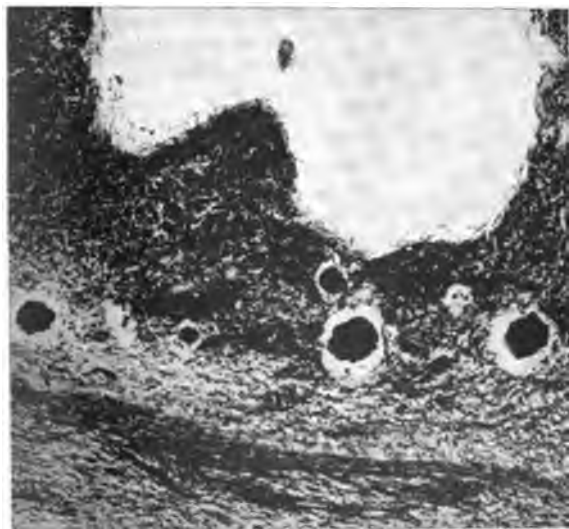


FIG. 7.

SOME OBSERVATIONS ON THE PROGRESS OF PSYCHIATRY.¹

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Texas.*

"Medical Jurisprudence is a branch of jurisprudence that pertains to questions concerning wounds, poisons, insanity, and presumption of survivorship requiring technical knowledge of the medical sciences for their elucidation and determination." It is not my purpose to deal with the subject in its entirety, but I will confine myself to that part pertaining to insanity; describing the methods of provision for, management and treatment of, mental diseases now adopted in this country.

It is necessary to refer to ancient methods in order to contrast the progress that has been made in this branch of science.

The past history of psychiatry up to the middle ages is known as the era of demoniacal exorcism. From this period up to and including the eighteenth century it is known as the chain and dungeon era; then follows that of the special asylums and hospitals, which continue to the present time with gradations of improvement to meet the existing conditions of scientific advancement.

All alienists agree that the earlier insanity is recognized and given the proper treatment, the more favorable is the prognosis; therefore the most modern method is the establishment of psychopathic hospitals for immediate provision and treatment, obviating the delay incidental to admitting the patient to the eleemosynary institutions for the insane.

This method is of prime importance to the patient and a source of comfort to those immediately interested, besides its adoption would render it unnecessary to provide custodial care in prisons, a custom which needs only to be mentioned to be condemned.

¹ Read before the thirty-fifth annual meeting of the State Medical Association at San Antonio, Texas, 1903.

After a certain period of time, the stationary and unimproved patients in these psychopathic hospitals are adjudged of unsound mind and committed to the regular hospitals for the insane.

Germany is taking the front rank in constructing these institutions, having them in all the large cities; they are managed and equipped similarly to our general charity hospitals.

Alienists and students of mental diseases substitute the terms "hospitals" and "mentally diseased" for "lunatic asylums" and "crazy;" these latter designations are harsh and frequently produce a deleterious moral effect on the sensitive patient. The laity are uneducated to the fact that insanity is not a disgrace, and so long as they persist in stigmatizing the mentally afflicted, so long will the restorations be diminished. The frequent recurrence of mental disease is largely due to the want of confidence that the restored patient encounters, involving a humiliation which revives the exciting cause.

At the close of the nineteenth century we have special institutions for the insane, epileptic, criminal insane, inebriates and mental defectives such as idiots, imbeciles and feeble-minded.

The methods of provision have undergone a decided change and the block or concrete system of buildings is being superseded by the cottage plan, which affords a more home-like environment for the patient whereas the block system is too sudden a departure from domestic life to be conducive to real comfort and happiness.

Since all observers agree that more good is accomplished by moral agencies in the treatment of mental diseases than by medicinal agents, the patient should be placed in the most suitable environment, home-like, sociable, with orderly and friendly associates. The psychical impression made upon an individual in a confused mental state is quite a factor in the ultimate prognosis and no expense should be spared in constructing our state hospitals with all the modern appointments. I heartily endorse the cottage system as the most feasible plan of provision for the mentally diseased; it offers many advantages over the block system:

First. A classification which insures happiness and contentment—a condition which aids materially the prognosis.

Second. An ideal hygienic system is secured.

Third. Isolation of infectious and communicable diseases.

Fourth. The danger of fire is very much reduced and the entire institution is not exposed, a condition that is a source of much anxiety in the block system where hundreds of patients are housed under one roof.

Fifth. The cost of construction, maintenance and repairs is not any more than that of the block system.

The physical management of our hospitals for the insane and the scientific treatment of mentally diseased and mental defectives has made wonderful progress in the United States, surpassing that of similar institutions in Europe, but there is a deficiency in original research from a pathological standpoint which is made a special department of study in the foreign hospitals, whereas only a small number of our institutions have well-equipped pathological laboratories. However this department is recognized as an important adjunct and it is only a question of time when the others will fall into line.

Many of our state hospitals have a well organized staff of physicians and surgeons who are enthusiastic in this branch of science, not so much for the remuneration they receive as from patriotic and charitable feelings toward their fellow-man.

The moral influence that encouraging words, patience and diplomacy exert, is of the greatest importance in the treatment, and can only be acquired by long experience and special study of each case. Another commendable feature is the regular staff meetings, the object and purpose being to present papers and cases which are discussed; there is no question that such meetings act as a stimulus and each member of the staff will naturally put forth his best efforts.

I will briefly outline what constitutes the accepted methods in this country for the public care and treatment of mental diseases from an eleemosynary basis. The location of an institution of this kind is of special importance to the public and state; a site should be selected near the center of a given population, easily accessible from all directions by adequate railroad facilities; there should be at least one tillable acre of land to each patient, and the capacity of the institution should not exceed twelve hundred beds.

The surroundings should be hygienic, there should be natural drainage, an uncontaminated atmosphere and an inexhaustible supply of pure water. An abundance of native shade trees adja-

cent to the building site will save expense and provide shade for the patients, visitors and employees. A gravel-pit on the premises will insure good walks and roads at a minimum cost.

The institution should be constructed on the cottage plan with all the modern appointments and intrusted to the management of a wide-awake, energetic superintendent, endowed with recognized executive ability and scientific knowledge; he should surround himself with enthusiastic, educated and conscientious medical assistants, loyal in every respect; and select competent heads for the other departments.

A pathological laboratory should be established, original research encouraged and regular staff meetings held at stated intervals, where papers and questions beneficial to the institution should be discussed.

There should be a well equipped operating-room, in construction and arrangement similar to those in our general charity hospitals, where aseptic surgery can be done according to modern methods. Electro- and hydro-therapeutic apparatuses should be installed as important adjuncts to the hospital equipment.

Trained attendants are much superior in every way to the inexperienced, therefore training schools should be established with a two years' course for graduation. The didactic and clinical lectures should be delivered by the hospital staff, assisted by experienced graduated tutors who should instruct in the practical duties in the ward and at the bedside.

Diversion is an important adjunct in producing contentment and mental rest, as idleness breeds discord. Patients are encouraged to take exercise, as daily recreation in the park, and assist with the work in the different departments of the institution, but no drastic measures are permitted to coerce them; the general experience of observers both in this country and in Europe is that properly selected employment for each patient is of great value in the treatment and this systematic employment is profitable to the institution.

All of those who are physically able and understand in a measure the import of the duties assigned are permitted to employ themselves. They assist in the general housekeeping of the ward, and many of the females become quite proficient in mending, knitting, hemstitching, crochet and drawn-work.

The different departments have their regular quota of patients—the laundry, sewing-room, kitchen, barns, mattress-shop, farm, grounds, store-room, plastering, painting, plumbing, dairy, garden, tailoring, dining-rooms, provisions being also made for emergencies that come up from time to time. Precaution is taken at all times to prevent over-exertion on the part of anyone.

The average amount of labor done by a patient is estimated as being about one-fourth of that of a sane person under the same conditions and circumstances.

Various amusements receive special attention and many of our state hospitals have a well organized orchestra to furnish music, which Abbott says is the only “perfect language of the higher emotions.”

Games, both indoor and outdoor, as cards, billiards, pool, dominoes, checkers, chess, lawn-tennis, base-ball, foot-ball and other field sports, have their place in the treatment of mental diseases.

Literature is provided, books, periodicals and newspapers—which furnishes a mental stimulus and is the means of whiling away the time and the dissipating lonesome feeling that idleness courts. Also the regular dances which permit the males and females to mingle with each other and are a source of especial enjoyment to them. Other diversions, as band concerts, matinees, concerts, carriage drives, picnics, fishing parties, as well as gymnasia, bowling alleys and swimming pools are recognized as important adjuncts to up-to-date institutions. These methods of diversion aid in producing new fields of thought and stimulate a cheerful feeling; besides it goes without contradiction that a depressed mental state naturally exists in any individual who is deprived of his freedom.

A system of open wards where patients are allowed the privilege of going out and coming in at pleasure, within certain prescribed hours, has proven to be quite a success, it restores the confidence of the patient and cultivates self-reliance. Certain rules are prescribed as to boundary limitations and conduct. It requires clear forethought and judgment in perfecting a classification for this system and can only be available by those who understand what constitutes honor and integrity.

A most important feature of this plan is the abolition of re-

straints, which permits a more natural condition and removes the continuous exciting influences that close confinement and seclusion engender.

It is the present policy in many institutions to discountenance any mechanical restraint—padded rooms, chains, muffs, wristlets, lockbeds and lock-chairs. It has been ascertained that the most violent, restless and destructive patient can be controlled without these methods; however chemical restraints assist in a measure, but they have been reduced to a minimum.

The locking of patients in rooms and dormitories at night is becoming obsolete, but is necessary in some cases. The open door policy aids materially in improving the hygienic conditions and reduces the danger of accident.

The employment of an increased number of night attendants is necessary, but the expense incurred is of secondary importance when the health and comfort of the patient are under consideration.

The construction of open pavilions on the grounds, isolated from the public drives and walks, is a feature that redounds to the credit of any hospital, especially where shade trees are conspicuous by their scantiness. Their architecture should be rustic in design and they should be equipped with comfortable seats, patent swings and hammocks, free latitude being permitted for social enjoyment and amusement.

Admission of visitors to the grounds, various departments and special wards is a prevalent custom in many state hospitals. I regret to say that the existing ideas of restraint and raving maniacs, as the phenomena to be observed, continue to cling to the public and many turn away with disappointment, because they were not allowed to see the worst cases, where dungeons, chains, padded rooms and other contrivances are supposed to exist. Such ideas show lack of education on the part of our citizenship and these people do not understand that these methods have about disappeared under modern provision, care and treatment.

The plan for adjudging patients requires a regular legal process but the jury trials and other proceedings that are necessary for criminals are becoming obsolete, in determining the mental soundness of an individual. It is only those who come in daily contact with these patients that can appreciate the mental anxiety that

such methods excite and practical experience has demonstrated that deleterious results follow such a practice, both from a moral and psychical standpoint. You frequently hear them plead that they were innocent of the charge and that no infraction of the criminal statutes was committed, but the usual confinement in jail makes an indelible impression, which requires patience and reason to eliminate. This particularly applies to those patients that possess some degree of intelligence and have delusions of persecution.

The most approved method for adjudging a person of unsound mind is outside of the temple of justice, except in contested cases. No publicity should be countenanced and in preparing the necessary court papers, care should be exercised, that the unbiased evidence of two or more members of the medical profession should be secured as well as any other evidence under oath to prove conclusively that such a person is of unsound mind.

Approved blank forms, as recommended by the state hospitals, should be filled out with care, so that a complete history of the case can be ascertained. It is important to have the family and personal history as also the facts pertaining to the immediate attack. Correct data aid in making up the statistical tables for the annual report and furnish compact knowledge from which deductions and conclusions can be made.

It should be the policy of all our states to make ample provision for the insane, so that trained attendants can be dispatched to immediately and safely conduct the individual to the state hospital.

Public opinion will ultimately demand that such cases should not be incarcerated in prisons, even for a short period of time. Mental unsoundness is a disease of the brain, either due to direct or remote functional derangement of the nervous system, which may be transient or become organic in character, resulting from heredity or stress; therefore ample provision, care and best methods of treatment become a duty that the public owes to its unfortunate fellowman. It devolves upon the twentieth century to correct these inhuman customs, which can only be done by education.

The evil effect produced by an aggregation of the different types of mental diseases clearly demonstrates the wisdom of segregation. It is necessary for many of the state hospitals to provide custo-

dial care and treatment for idiots, imbeciles, feeble-minded, inebriates and epileptics, which brings together a heterogeneous population and produces a condition by no means conducive to the improvement of each class.

It is practically impossible to manage scientifically an institution of this kind. State provision for each class is the solution of the problem, and special institutions should be constructed with all the modern appointments, where the number of cases will justify the expense. Texas is now building the State Epileptic Colony at Abilene which will eventually remove the epileptics from hospitals for the insane. The time is coming when another eleemosynary institution will be constructed for the care, education (both industrial and literary) and treatment of those mental defectives termed idiots, imbeciles and feeble-minded. The purpose will be to admit children within certain prescribed ages and remove them from the hospitals for the insane. It has been clearly shown by similar institutions in other states and countries that a certain percentage can be educated and so mentally improved as to make useful citizens, nor is the general improvement in the majority of cases to be disregarded.

Public provision for inebriates is another approved plan, but little progress has been made in this country, separate institutions being provided for those types of mental diseases resulting from alcoholism, both acute and chronic. It requires no forethought to see what a benefit it will be to the citizenship and posterity of any state. Numbers of these cases can be cured in a very short time, if no permanent pathological change has taken place in the cerebral tissue or vital organs.

In all eleemosynary institutions there are cases of pulmonary tuberculosis and special cottages should be erected, with complete equipments. A perfect sanitary condition is all important, with good ventilation and solariums. The most approved method of treatment should be given in all its details.

There is another class known as the criminal insane, and here observation and judgment are required in forming an opinion in cases of suspected simulation. The association of this class with the other patients in our state hospitals exerts a detrimental influence upon the sensitive and appreciative person; also on those that have delusions of persecution. Insane criminals, according

to their nature, require entirely different disciplinary treatment from the ordinary insane. It is best to segregate such cases in isolated annexes or establish a branch department at the most centrally located institution. The object and purpose of this department should be to admit persons, where the plea of insanity is a defense for a violation of the criminal statutes, and those that have become mentally unsound after conviction before their term of punishment has expired. The suspected cases of simulation should be closely observed at all times and the importance of a trained corps of attendants will materially aid in detecting the malingerer. The system of provision, care and treatment, will necessarily be more drastic than that for the other mentally diseased.

The most approved method for the criminal class is separate institutions, but this is not economical unless the number of cases justifies the expense.

It is difficult to realize the number of eleemosynary and penal institutions in all countries and their number is gradually increasing. There is a limit to all things, and it is only a question of time when the philanthropists and taxpayers will see the necessity of restrictive laws intended to prevent the hereditary transmission of disease. The statutes should be so drastic as to stop all procreation of species among the defective and, if enforced in all their details, will in a degree improve the vigor and health of our citizenship, as is forcibly illustrated in the animal kingdom.

Education of the masses is a means to this end of solving this momentous problem, but so long as personal liberty is engrafted in our souls, so long will the hereditary transmission of diseases continue notwithstanding the protests of our profession and students of psychiatry.

In conclusion I cannot refrain from trying to impress the necessity of education along this line in regard to our legislative bodies. It is a physical impossibility for the management of the state hospitals for the insane and mental defectives to incorporate modern principles with inadequate appropriations.

Economy and honesty are a necessity in all state governments, but the public service frequently retrogrades because cheapness is considered economy. It is not right to place the dollar before our unfortunate fellowman, and liberal means should be provided,

from time to time as necessity demands, for the proper care and treatment of mental diseases. Legislators know that the people desire an economical and honest administration of the state government and their consciences dictate the necessity of guarding their interest, but in doing so they do not represent the friends and relatives of the indigent patients, who demand and expect of the management of these institutions everything imaginable for their proper treatment. In fact we are brought face to face with the saying, "If you are going to do anything, do it well."

How can a progressive superintendent follow the dictates of his conscience when he so carefully prepares an annual budget, to meet the demands of the people and to keep abreast of the time, and then has it trimmed down by the inexperienced, so that the expense of the government should not exceed the revenue, thereby forcing an imperative necessity for the public service of many state hospitals to be deprived of means that are so necessary for their proper management in all of its details. Banquo's ghost arises and frightens those who have future political aspirations, if they conceive the idea of providing more revenue. Self preservation, the spirit of politics, pervades their innermost souls.

LETTER FROM FRANCE.
THE QUESTION OF DEMENTIA PRAECOX IN
FRANCE.¹

Among the new theories that come from time to time to overthrow the edifices of our always imperfect classifications in mental pathology, the conception of dementia praecox, as evolved by Prof. Kraepelin in the 6th edition of his book (1899), is one that will leave a lasting impression, however much it may undergo modifications on more than one point. It is not that the master of Heidelberg has inaugurated any new method; indeed to mention but one example it was the same necessity of considering the entire evolution of any given disorder in the insane, whatever the duration of its existence, which led Magnan to construct his chronic delirium. But Kraepelin has conceived a plan of such boldness as to call forth eager followers, enamored of innovation, and at the same time irritated detractors, who dislike to have imposed upon them the task of modifying ideas, which they have been wont to consider as already final.

What influence has this fondness for innovation, occasionally exaggerated, exerted upon French works? What are the criticisms, evidently difficult to refute, which others have formulated with regard to this doctrine? What is, in short, the place that this new morbid species is coming to occupy, and what are the opinions, previously held by us, which the partisans of the past oppose to it? Herein lies what appears to us in France to be the real gist of the discussion, some account of which, I hope will interest American readers.

But first it is necessary to point out, somewhat briefly, what the authors who have studied the question in our country have thought of it. The terms "dementia praecox," "hebephrenia," "juvenile dementia," are not in reality new; the same idea of an affection appearing with adolescence and terminated in rapid dementia is

¹ The numbers refer to the bibliographical index at the end of the article. The references are arranged in chronological order.

found in Esquirol's *acquired idiocy*. Morel was the first to give a clear and concise description of the disorder and to employ the term *dementia praecox*, which he classed among the "hereditary insanities with limited intellectual existence." Nearer to our times, Ball (1) in his clinical lectures assigns puberty and heredity as the two etiological factors. Mairet (3) adopts two forms, pubescent insanity with arrest of intellectual development, and pubescent insanity with variable mental disorders.

Charpentier (4), at the Rouen Congress in 1890, gave an account of an interesting study on dementia praecox, which he defined as a "chronic and incurable mental disease, appearing unexpectedly in young subjects (under thirty years), normally and regularly developed, who have exhibited no serious disorder other than that which has accompanied or preceded the dementia." This definition is too broad, for among the eleven varieties described by him are included the precocious dementias of epilepsy, syphilis, alcoholism, some moral insanities and even juvenile general paralysis. Nevertheless, we find here also the arrest of ordinary development in normal children which corresponds to the simple dementia praecox of some authors, the dementia praecox associated with puberty, "although we cannot say that all the insanities of puberty, all hebephrenias, are instances of dementia praecox, nor that in all cases of dementia praecox coincident with pubescence the latter is necessarily the cause." Again, reference is made to another variety of dementia which springs from a source manifestly hereditary or degenerative, and to other patients designated as chronic maniacs or as chronic melancholiacs, among whom Charpentier distinguishes "certain mystics and certain patients with more or less systematized delusions of persecution, some but not all of alcoholic origin, often paraphrasic or having a language rendered peculiar by its neologisms, who come speedily to a state of incurable chronic dementia." Next is mentioned the dementia following certain acute diseases such as typhoid fever, erysipelas, the puerperal states; and finally, a curious variety of demented individuals, for whose cases no etiology is known, who are the children of old people or have been reared by old men, the contact with age having had so it seems, the effect of withering them in the bud. Unfortunately, Charpentier has abstracted from these

precocious dementias a symptomatology entirely negative, for he undertook to bring together these unlike groups instead of giving a clinical description, and, notwithstanding the subtlety of some of his observations, the sterility of the procedure is evident. Seemingly using again Esquirol's method for the classification of idiots, he divides his patients into groups according to the condition of their language, manner of speech, and motility: those who could not or would not speak, those whose responses were null or monosyllabic and those in whom incoherence was a permanent feature.

The discussions aroused in Germany by Kahlbaum and Hecker, with their publications on catatonia and hebephrenia, had during this time begun to attract the attention of French alienists. In 1888 Séglas and Chaslin (2) published an important critical review on catatonia. And what gives special interest to this work is the fact that one of the subscribers to the objections made to the doctrines of catatonia then prevalent in Germany (Séglas) accepts in large part dementia praecox as it is formulated to-day. Séglas and Chaslin, after examining the views of the more important authors, declared that catatonia is not a special *vesania*, none of the symptoms having sufficient value to characterize it as a psychopathic form. This, they say, is far from being the case inasmuch as the muscular catatonic phenomena, taken alone have nothing characteristic; they are found in a multitude of *vesanic* affections, they have in catatonia nothing specific nor regular, and seem to be of a varied nature. On the other hand, the psychical symptoms which Kahlbaum declares to be of the same nature as the preceding (verbigeration, mutism, stereotyped gestures, pathetic attitudes, systematic resistance), which is a simple hypothesis on his part, are met elsewhere. In short, the cyclic course invoked for this malady by its creator, has nothing characteristic, nor indeed regular, and gives us no right to consider *melancholia attonita* as a particular form in its evolution; the occurrence, the intensity, the mode of onset and succession of symptoms are all variable.

But if none of these elements taken alone has the value which Kahlbaum gives it, can we consider that in their reunion the existence of catatonia as a morbid entity should be inferred? Séglas and Chaslin estimate that there is in catatonia a simple co-exist-

ence but no association or combination of symptoms. And, in fact, we have nothing to connote a bond between them, neither in pathological anatomy, in symptomological evolution, nor in etiology, inasmuch as the causes invoked are all commonplace. They add that the objections made by Kahlbaum to the existence of stupor (*Attonitât*) other than as a symptom are without sufficient foundation. One might hesitate to accept it as an entity, but it does not necessarily follow that stupor is only a phase of the malady because it has perhaps been preceded by other conditions; it could very well represent the period of full development as it were (*période d' état*); and they say, "Because a malady can not be constituted from all its parts, and could pass through different stages before arriving at the stage of full development must it be rejected for that reason? If that is justifiable, there would be left to us very little mental pathology, for there are but few vesanic affections which are fully developed from the beginning or remain identical throughout their duration. Take for instance mental exaltation, and, above all, depression and moral hypochondria; are not these noted at the beginning of all insanities?"

These writers then go on to give their own explanation on the subject. They find in Kahlbaum's catatonias two kinds of factors which characterize the ground upon which the disease develops. There is at first degeneracy in general, for one finds there, as a matter of fact, the traits common to hereditary alienations (the alternations of delirium, the succession of exalted or depressed conditions, the monotonous, incoherent, emphatic or sententious verbiage, dramatic poses, special attitudes, such as the cabalistic, the predominance of poetic, dramatic, mystical ideas,—in short, the reversion to certain periods of biological evolution). It is on this tainted ground that the influences mentioned by the creators of catatonias act as the occasional cause, with the frequent aid of another variety of factors, the hysterical phenomena, much neglected in Germany. In support of this opinion Séglas and Chaslin cite their personal observations.

We see, then, that the creation of catatonias as an absolutely independent creation did not find favor with these two authors, who did not consider the conception of this new disease sufficiently forcible to justify its separation from the forms already admitted

by contemporary French alienists. Their opinion is summed up as follows: "Kahlbaum's position does not seem to us to be tenable. We could repeat in substance à propos of catatonia what Dr. J. Falret formerly said of catalepsy, that in the description of this affection there have been brought together facts more or less dissimilar, with the result that we have the history of a symptom, or better of a syndrome, rather than of a veritable malady. Considering, moreover, that from the somatic point of view the predominant phenomenon is the presence of disorders of the motor nervous system, from the psychic point of view a state of more or less profound melancholia, the remainder, symptoms or course, having nothing special about them, we think that for the present catatonia should be classified with stupor, simple or symptomatic, of which it could only be a variety in closer relation with a degenerative, and more particularly a hysterical foundation. This conclusion is not an explanation; but it is the sole opinion which we appear to be justified in formulating in the actual state of the science."

Some years later Le Maitre (6) studied the cataleptic conditions in mental diseases. He observed their frequency, and, following a customary nomenclature, called attention to their presence in alcoholic delirium, where they are rare, in melancholia, mental confusion, in mania (where they exist only in the depressed period of the beginning or the end) in periodical insanity and in the delirium of degenerates (religious melancholia). He finds certain analogous conditions in the dementias and in idiocy. In epilepsy these cataleptic phenomena are found preceding, following or taking the place of the attack. They are not present in hysteria, the hysterical catalepsy being a separate variety. In discussing Kahlbaum's catatonia, Le Maitre says we find "some observations which in the actual nomenclature exactly suit the group of circular insanities with their so definite alternations of mania and melancholia, occurring at fixed periods, without known cause. Others evidently belong to mental confusion and acute dementia. Others, again, apparently are connected with certain cases of melancholia with stupor, interrupted by accesses of anxiety or panophobic crises. * * * * It is not necessary, then, to consider as a special disease the cataleptic

conditions which we observe in the course of the psychoses. They stand, however, in close relation with the stupor which precedes or accompanies them in the majority of cases."

It is evident that Kahlbaum and Le Maitre look upon the cataleptic conditions from totally different standpoints. Instead of attempting to establish a union, on the existence of identical and constant symptoms in varying mental disorders, the latter starts from the affirmation of these diverse conditions to establish the commonness of one of the catatonic symptoms. He then finds it convenient to deduce in favor of his thesis another argument for the existence of cataleptic conditions in the most varied forms of intoxications, whether they be exogenous (haschisch, infectious diseases), or endogenous (uremia, auto-intoxications) as had been done before Le Maitre's work, and has since been done by various authors (Brissaud and Lamy, Bernheim, Dufour, Dupré and Rabé (cf. Latron 17).

About the same time Roubinovitch applied himself to the difficult task of identifying the mental diseases which were known in France and Germany under different names. He refuses to regard catatonia as a separate disease entity and says, "Each of the symptoms taken separately has nothing pathognomonic, * * * * and their purely accidental association by no means constitutes a syndrome based on a determinate clinical, physiological, or anatomic-pathological datum." "As to the pretended circular evolution," he continues, "it does not exist in the observations of Kahlbaum himself."

Some years later, in 1899—and before the appearance of Kraepelin's new doctrine—Christian (8) published a work, now become a classic, on dementia praecox in young people. The readers of the AMERICAN JOURNAL OF INSANITY are already acquainted with it, since a translation appeared in that journal. I shall therefore give here only a brief resumé. Christian's conception is already an established doctrine, although more moderate than those which have followed it. Among the various forms of mental derangement which may appear at puberty, he takes no account of those "which differ in no way from those which are observed at other ages; whether a delusion of persecution appears at eighteen or at forty, the symptoms should be the same." Just here evidently

lies the gist of the whole question and Christian's example is not a fair one, for it is necessary not only to describe the symptoms, but also to consider their basis as well as their evolution. But apart from this mistake Christian gives us an excellent description of dementia praecox which "presents special features in that it appears only at a determinate age, after a variable delirious onset, without appreciable cerebral lesion, and, above all, without anything in the first years of the patient which has seemed to pave the way." Of this affection thus defined the "constant and characteristic" manifestations are: (1) Its appearance at puberty. (2) Variable delirious manifestations at the beginning. (3) Sudden impulses. (4) A rapid termination in a more or less complete dementia.

Hebephrenia may be mild or severe. In speaking of this second variety, among the numerous clinical observations adduced in support of his description, Christian cites several cases that belong to the hebephrenic and catatonic forms of the present Heidelberg school; and the Charenton physician sides with Fürstner, Kraepelin and Aschaffenburg in merging catatonia and hebephrenia "in a single selfsame disease, for which the term dementia praecox would be more appropriate." In the discussion of the etiology which follows this clinical part, Christian holds that the influence of heredity, so often invoked, is quite contestible and sometimes plainly invented; whereas, on the other hand, the great importance of overwork is to be noted, especially the stress of studies which have been beyond the cerebral strength of the patient. This same etiology is insisted upon in his inaugural thesis by Magnier (9), who also holds that puberty has no influence on psychoses of precocious onset. Leitesen (27) thinks that physical overwork adds its effects to those of heredity and puberal evolution.

In reading Christian's articles one can hardly fail to be somewhat astonished that in his chapter on diagnosis he has almost denied the existence of juvenile general paralysis, which has been so firmly established in France, since the time of Régis. But, after all, this work, the outcome of considerable clinical experience, is the most important of those which had appeared in our country before the introduction of the Kraepelin doctrine.

The new edition of Kraepelin was published in 1899; but before

entering upon an examination of the works directly influenced by the Heidelberg school, it is necessary to say a word about the discussion on the psychoses of puberty at the International Congress of 1900. In this review, however, it must suffice to mention the opinions of French authorities. Voisin (11) supported the older doctrines; "We could not," said he, "unite in a single formula, as has been attempted under the name of hebephrenia, all the psychical disorders associated with puberty. Some, are completely curable (pure psychoses), whereas others terminate in an intellectual enfeeblement complete or incomplete (states of deterioration); others again, form part of a whole which constitutes hereditary mania (psychic degeneration); we meet with certain associations of neuroses and psychoses (neuropsychoses); and lastly, certain mental troubles are due to toxic conditions (toxic delirium)." According to Voisin there are no hebephrenias excepting the dementing psychoses.

In the discussion which followed, Trénel (11) and Gilbert Ballet (11) devoted themselves to demonstrating that there is no relation between dementia praecox and puberty, arguing that puberty is a relatively short period and that there exist other causes in the cases in question. Of course this opinion, generally held in France to-day, is opposed to that of several foreign authorities (Marro, Tokarski, Ziehen).

In a communication to the same Congress, Cullerre (12), for whom also the psychoses of puberty have no specific character, described five affections which may appear at this epoch—mania, the polymorphic delirium of degenerates, mental confusion with or without catatonia, certain conscious obsessions and irresistible impulses, and finally, dementia praecox. Again, this last may appear under five forms, all terminating in a dementia which comes on so much the earlier as the onset of mental disorders is more precocious. Clinically, Cullerre distinguishes: (1) The cases in which the dementia appears without warning from the onset being insidious and progressive; here we have a condition of physical and moral passivity, interspersed with violent impulses and terminating in a vegetative life. (2) Cases in which following certain disturbances of emotivity, or of the character, or without any apparent cause, appear disorders of nutrition with neuras-

thenic symptoms, and then suddenly an acute maniacal state with confusion and hallucinations, followed rapidly by dementia. In girls the process often begins with certain mental troubles associated with the catamenia. (3) The catatonic syndrome, agitation with delirium, often having a religious basis or stupor; successive crises or a chronic state, always with terminal dementia. (4) Paroxysms of repeated maniacal excitation, followed by a rapid dementia. (5) The systematized polymorphic delirium of degenerates ending in a dementia less complete than in the preceding cases and preserving a reflection of the original delirious color.

The foregoing, then, in the main make up the important works which had appeared in France on dementia praecox before the time that several authors of the first rank such as Sérieux (10) and Séglas, brought into general notice the new and sweeping doctrine of Kraepelin which took the majority of the psychoses or vesanias, and welded them into its dementia praecox with its triple symptomatology of hebephrenia, catatonia and paranoïd dementia. We shall now consider how this conception has been received among French alienists, and, without hampering ourselves with dates, we shall begin with those who adopted it with least reserve and modification.

Deny and Roy (28), in a monograph calculated to disseminate the new doctrine, are not willing to modify the principal lines of Kraepelin's work although they have not hesitated to give us at the same time the results of their own experience. They accept the three forms—the hebephrenic, the catatonic and the paranoïd—the last admitted entirely according to German data, that is to say, including all the systematized deliriums. Dementia praecox is a psychosis of evolution, springing from a hereditary but not a degenerative soil. The prognosis is very grave, and it is to remissions, not to recoveries, that we must ascribe the cessation of symptoms.

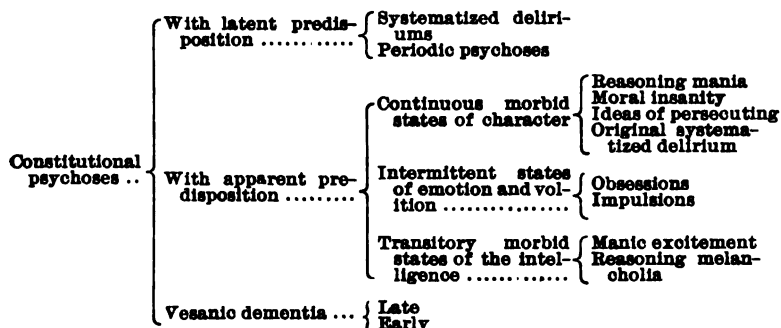
Rogues de Fursac (29), although fully imbued with Kraepelin's ideas, follows them at a greater distance. He distinguishes a form without delirium, a catatonic form and a delirious form, reuniting the hebephrenic and paranoïd dementias of Kraepelin; this dementia is delirious whether it be from incoherence or from sys-

tematization with varieties of persecutory, melancholic, or megalomaniac delirium. This description, nevertheless, leaves untouched the chronic delirium of which the author speaks in an appendix to his subject, recognizing that it has a certain right to individuality owing to its appearance at an advanced age, its perfect systematization, its regular evolution and the delay with which the dementia comes on—in fact it may not appear at all. Fursac holds that dementia praecox is due to an auto-intoxication.

Sérieux (19), who was among the first to propagate the Heidelberg doctrine, while reinforcing it with his own observations, limits somewhat its predications. He distinguishes four forms of dementia praecox: the simple form, rarely observed in asylums, and which, characterized by a progressive enfeeblement of the intelligence, may be abortive the delirium being absent, and although the intellectual faculties are diminished, the patient may still preserve former acquisitions and the inferior, quasi-automatic forms of cerebral life; in these cases the need for exercising psychic activity disappears and the personality is affected in its most characteristic elements. His hebephrenic and catatonic forms agree with Kraepelin's description. The fourth form—paranoïd dementia—is not made to include the systematized deliriums which are eliminated by Sérieux, by reason of their special clinical physiognomy and the slowness of their evolution, although in general, he says, the systematized hallucinatory deliriums terminate sooner or later in intellectual enfeeblement.

Some weeks ago there appeared under the direction of Professor G. Ballet a new treatise on mental pathology. Inasmuch as, for many years no French classification based upon such an eminent work as that of the authors of this treatise has appeared, it will not be out of place to give here a summarized table of its contents in order that it may be seen what place dementia praecox occupies in it. After the chapters devoted to symptoms and syndromes, which include mania and melancholia, the table of the subject-matter is as follows:

Mental disturbances in infections and intoxications:



Mental disturbances in the neuroses:

Organic psychopathies { General paralysis
Psychic disturbances in organic encephalopathies

Mental disturbances with congenital or infantile cerebral lesion—idiotcy.

Mental disturbances with lesions of the thyroid body.

This classification has been purposely preserved from anything in the nature of a system, and is adapted, so far as possible to suit the clinical realities. Therefore, in the subtle study of the constitutional psychoses, the compilation of which has been intrusted to Arnaud (30), the vesanic dementias, tardy and precocious, have been treated separately so as to prevent any prejudgment upon their still hypothetical nature. From our standpoint there can be only praise for such caution in a didactic work, since the gravest objection which can be formulated against Kraepelin is his enthusiasm for system notwithstanding the incontestible progress made by him over the purely theoretical classification of several of his German predecessors.

The works of which we have just spoken consider the problem of dementia praecox in its totality. Those of certain other authors, no less important, have a more restricted scope. Here, also, our analysis will be made to suit the purpose of the present review and without following the strict chronological order. Séglas (21) has recently taken up again the subject of catatonia, the study of which, in conjunction with Chaslin, he had inaugurated in France; his work during the past fifteen years can be readily followed. It is, he now assures us, in dementia praecox that the catatonic syndrome attains its pronounced characteristics of development, intensity and permanence. We French-

men are wrong (he adds) in considering as sufficiently characteristic of catatonia the consecration of the cataleptic attitudes, which in reality is nothing more than a simple symptom, relatively infrequent, and not distinguishable in its external appearance, any more than echolalia and echopraxia, from symptoms of an identical nature which we find in other mental disturbances, for instance, in hysteria and general paralysis. The striking, capital phenomenon is negativism; another very important element is stereotypy. Séglas has made a detailed study of the character of these catatonic symptoms and holds that they are automatic elementary phenomena, absolutely independent of the consciousness of the patient, without relation to delirious ideas, hallucinations or emotional disorders, a view that is entirely in accordance with the permanent or periodical, partial or general, insufficiency in cohesion of the various elements of the personality. This lack of unity of synthesis of voluntary activity constitutes abulia. And the abulia, however strange it may seem, manifests itself by opposition and resistance, for volition can just be lost no less as regards ability to arrest resistance than as regards the ability to act. The abulia is found in stereotypy, inasmuch as the acts that cannot possibly be accomplished are the new acts. It is interesting to note the contrast which exists between the constraint and hesitation of the catatonic to execute new acts or commands and the relative ease with which he accomplishes certain stereotypes. And it is this basis of abulia which constitutes a ground of choice for the manifestations of suggestibility. Séglas elsewhere (16) states that he has not encountered among his catatonics the stigmata of hysteria.

Meeus (26) in Belgium, has arrived at the conclusion, that between hebephrenia and catatonia there exists only differences of degree, and that these two conditions are combined in dementia praecox. In a second publication he relates some observations concerning dementia praecox in the adult and the aged. In the cases of these latter patients, the symptomatology being the same as in young people, dementia praecox presents the characteristics of a special malady, the age of the patient not being the principal characteristic.

Meeus considers also that paranoïoid dementia presents very

vague limits in comparison with the preceding forms. This type, so much debated, had already been made by Ségla (13) the object of a critical study, which had attracted to his opinions valuable adherents among French authors. He held that in paranoïd dementia there was a primitive dementia masked in the beginning by acute symptoms, subject to remissions and to disappearance. These symptoms with rapid onset are variable; they consist of delirious ideas, depression, anxiety, excitation, fantastic discourse and incoherent acts, despite the fact that there is no mania, melancholia or confusion. This polymorphic delirium, with multiple precocious hallucinations, is characterized by a mobility, a foolishness and an extravagance which equal, if they do not surpass, those of general paralysis. There are, however, no somatic signs; the emotional reactions are inadequate for this delirium and signs of chronicity and of intellectual enfeeblement shortly appear. After mentioning, by way of comparison, the similarity existing between this primitive dementia masked by a delirium and general paralysis with its deliriums, Ségla speaks of Kraepelin's doctrine as follows: "The idea of this primitive dementia, its clinical characters and the age at which it appears (from 18 to 30 years according to our observations) might justify the opinion of Kraepelin who considers it as a form of dementia praecox. It is advisable, however, to make distinctions and not generalize too much. In his paranoïd form of dementia praecox Kraepelin describes two groups: the first seems to us to correspond fairly well with the cases which we have studied; the second comprises all the cases ranged under the name of fantastic forms (*phantastische Formen*) or the hallucinatory forms of paranoia. In our opinion these last cases could not be classed with those of the first group, since they present the definite characteristics of paranoia. And it is not without some astonishment that we see included in dementia praecox all the more or less systematic and hallucinatory varieties of paranoia which occasionally terminate only after a very long time and from various causes in a certain degree of intellectual enfeeblement and in which Kraepelin would include even the chronic delirium of Magnan, that is to say, the longest, the most systematic of all the vesanic forms, and in which the true dementia, even of the terminal period, is still the object of many controversies."

So much then for the theoretical discussions concerning dementia praecox. Not that we have by any means passed in review all the works of which this subject has been the instigating element, for the authors who regard it as a disease entity have striven to define some of its positive symptoms in order to make its existence entirely legitimate, and to give it a position from which it could not be overthrown. To pass by these works in silence would mean a failure to present the true phases of the study of dementia praecox in France. Consequently, without making a full analysis here, we shall give a brief account of the more important, contenting ourselves with only an occasional allusion to the others.

- Sérieux (20) with his pupils, Mignot and Masselon, has studied the physical disorders of the precocious dementias. Somatic troubles, he says, are frequent enough in dementia praecox; no one of them, however, reappears in a constant manner; on the contrary, an important characteristic of these disorders is their variability in the same individual. In a general way it can be said that the most constant symptoms are: (1) The enfeeblement of the reflexes of light and accommodation; (2) Exaggeration of the tendon reflexes; (3) Pupillary dilatation; (4) Diminution of sensibility to pain. These two last symptoms diminish very markedly with the prolonged duration of the disease. It is the catatonic form which presents the maximum of disorders; then comes the hebephrenic form, although the sensory symptoms in connection with pain are less frequent; to the paranoïd form, on the other hand, belong symptoms much less constant and less prominent. In short, among completely demented patients, the disorders are much more accentuated in those who are plunged in a state of hebetude than in more lively or even agitated patients. It seems (say these authors) that proportionately with the evolution of the disease, when the poison has been eliminated from the system, the physical disorders, when relieved from the, generally transient, action of the toxin upon the various territories of the cerebro-spinal axis, tend to recede. Alone, or almost alone, persist the dementia symptoms, the result of grave and permanent lesions due to the selective action of the poison of dementia praecox on the most vulnerable elements of the cerebral cortex.

Séglas (20), whose observations corroborate in general those of Sérieux and his pupils, has not observed the modification of the pupillary reflexes; he mentions an enormous retardation of the reaction to pain, rapid variations in weight without apparent cause, and the frequency of dermatographia.

In this connection should be mentioned the works of Crocq (24), of Masoin (25), certain researches of Dide (14) on the reflex syndrome of dementia praecox that consist in an exaggeration of the tendon reflexes, a diminution or abolition of the cutaneous reflexes, and a muscular hypertonus; those of Dide and Chenais, and the thesis of Chenais (23) which summarizes them.

In view of the rarity of this sort of work, we should like to emphasize the practical experimental researches by Masselon (22) on the psychology of precocious dementes. The technique employed is well-known number tests, Arsonval's chronometer, etc. The results obtained by these procedures show the existence at the beginning of the affection of a symptomatic triad—apathy, abulia and loss of intellectual activity. The attention is exhausted very rapidly, and a more marked degree of torpor or a more varied distractibility follows. In place of reflection and the normal systematization of ideas, we have incoordination and a lack of precision in the ideas which gives to the thought a characteristic puerile turn. The association of ideas is enfeebled because of the tendency of the elements of the mind to be isolated; and we have all the degrees from stereotopy to stupor, where consciousness seems void of any representation. Masselon thinks that this diminution of ideas and of images offers a good diagnostic point in the differentiation between dementia praecox and the intermittent psychoses. All these symptoms are the expression of the state of dullness of cerebral activity and of the psychic disaggregation which is the consequence. In this condition the patient accepts all external suggestions. The memory is also affected: in the beginning there is difficulty at first in recollecting; then the recollections diminish in number and those that remain take a stereotyped form. But the more important of these disorders have a slow course and are never as profound as those belonging to general paralysis or senile dementia. This effacement of memory pictures, therefore, according to Masselon, is

the consequence of an intellectual apathy, a point which distinguishes it from the disturbances of memory encountered in senile dementia or paresis. All these perturbations of the systematization of ideas and of memory bring about certain profound disorders of comprehension and assimilation, with an unconsciousness of the external world. Thus an early and very important symptom is the emotional indifference which often appears long before the intellectual disturbances and which accounts for the abulia and the absence of desire or curiosity.

The list of publications treating of dementia praecox would be incomplete without some mention of those called forth by the program of the last Congress at Brussels (32). Even a cursory analysis of the voluminous report on catatonia and stupor, in which Claus (31) showed himself to be a disciple of Kraepelin, is impossible within the limits of this letter. It would be difficult to find a more conscientious collection of the teachings issued upon this subject principally in Germany. And besides we are now dealing mainly with the study of dementia praecox in France. Elsewhere in the course of the discussion of this report, Masoin, Meige, Archambault, Marie hardly touched upon the general problem of dementia praecox. Massant and Ballet alone dealt with it seriously. Massant spoke of the difficulties encountered in the diagnosis of dementia inasmuch as there is no criterion of that condition, no sign constantly supplied by the psychic enfeeblement where alone it could be looked for. G. Ballet protested against the association so often maintained between general paralysis and dementia praecox, since the latter has neither a pathological anatomy nor an etiology; he then proceeded to formulate the problem which the next Congress may possibly solve, namely, What is the nature of dementia praecox? Is it an hereditary degeneracy or an individual malady due, for instance, to an auto-intoxication? In other words, is it an accidental or a constitutional psychosis? Only when—in the absence of a pathological anatomy—an etiology has been supplied for dementia praecox will it have an absolute right to existence.

Finally, in order to give a clear idea of the present status of the question in France, it still remains to mention the synonymous terms for dementia praecox employed here; or to put it better,

the classification adopted by the adversaries of this doctrine for the various forms and the terms employed by them in the diagnosis of what others call hebephrenic, catatonic and paranoïd dementia respectively.

Following Morel, Falret, Joffroy (18), Vigouroux (5) and Arnaud (30) Magnan classes these conditions among the degenerative psychoses and the deliriums of degeneracy. For the simple forms, without delirium, his pupil, Legrain, declares that "a grave hereditary predisposition appears to be the undoubted cause of a dementia so precocious." The intermittent forms of deliriums terminating in dementia, that is to say, the hebephrenic and paranoïd forms, he classes with the intermittent psychoses among the delirious attacks of degenerates, which may or may not be accompanied by dementia, the recurrence affording a proof of cerebral instability, resulting from degeneracy. Stupor, Robinovitch (7) considers to be the melancholic depression of degenerates. Thus dementia praecox, with all its various forms, is classed by Magnan's school among the degenerative psychoses. The stress laid upon etiology in his classification is well known.

Under other circumstances, with the same etiological data, a diagnosis of puerperal psychosis is made in the cases of certain patients, of whom not a few are precocious dementes. Fortunately, however, such diagnosis are becoming rare.

We might still, with Anglade at the Marseilles Congress, class as secondary systematized deliriums, the deliriums which persist in terminal dementia, but except perhaps for the syndrome of Cotard this classification is now seldom used in France.

Régis (11), a defender of the part played by toxins, endogenous or exogenous, in the psychoses, declares that the psychoses of puberty, of autotoxic origin, comprise a portion of the cases of hebephrenia, notably those with catatonia. He agrees with Lalanne (15) in insisting upon this view, and treats these patients with ovarian extract.

Enough has been said to show that in France the study of dementia praecox has not been neglected. Furthermore, I think that it has been shown that the conception of Kraepelin has not been accepted without certain limitations, although it has found a place in the domain of data currently admitted in the world of

alienists. With several alienists in our country, where the enthusiasm for clearness is so great, that occasionally it might appear to be too intense, perhaps it is the term *dementia praecox* that has aroused some feelings of distrust. What could seem more contradictory than to use the term *dementia*, implying the idea of incurability, and the epithet *precocious*, to an affection which can appear only at an advanced age, and which, from the admission of its authors, is curable in a proportion of cases quite worthy of attention. This is, however, only an instructive consequence of a defective appellation. More serious is the actual refusal of some well-known and influential men to comprehend in their limits the majority of systematized deliriums.

A. V. PARANT.

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2. Séglas et Chaslin.—La Catatonie. *Archives de Neurologie*, 1888.
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Notes and Comment

DINNER TO DR. JOHN B. CHAPIN ON HIS FIFTIETH ANNIVERSARY.—The recent celebration of fifty years of service in behalf of the insane by Dr. Chapin of the Pennsylvania Hospital proved to be a notable event. To do him honor and to express in a public manner their appreciation of his life-work, about seventy-five of his friends gathered at dinner upon Thursday evening December 1, 1904, in the Clover Club room at the Bellevue-Stratford Hotel in Philadelphia. Besides the Managers of the Pennsylvania Hospital, there were present many physicians engaged in the study and practice of psychiatry and numerous professional and personal friends from different parts of the country.

The special event commemorated was the fiftieth anniversary of his entrance upon asylum work at Utica, New York, in the autumn of 1854, after a long medical service at the New York Hospital. The menu card was appropriately illustrated with views of the New York Hospital, the Utica State Hospital, Brigham Hall, Willard State Hospital, and the Pennsylvania Hospital (Department for the Insane), institutions in which Dr. Chapin's professional life had been spent. After dinner there were letters and telegrams read and speeches were made, all breathing a spirit of warm affection for Dr. Chapin, and hearty appreciation of the work which he had done. In response to the introductory remarks of Dr. Brush, the chairman, Dr. Chapin gave an interesting resumé of his half-century of professional work, and spoke of the changes which he had witnessed. He described the old New York Hospital in lower Broadway and gave vivid and historically interesting reminiscences of his service there. His description of the State Lunatic Asylum, Utica, N. Y. (now the Utica State Hospital), in 1854, when it was the only State Asylum in New York, was also of extreme interest. From a historical point of view probably the most valuable part of the address was his account of the establishment and organization of the Willard State Hospital, in which he took such a prominent and efficient

part. Few have ever known before how closely the fortunes of this hospital and Cornell University were bound up together and how the scheme to establish an institution for the chronic insane held within its nucleus the germ of what is now one of the greatest American Universities. We are happy to be able to publish Dr. Chapin's remarks in full in this number of the JOURNAL.

Not the least interesting feature of a charming evening was the presentation of a striking and life-like portrait in oils, of Dr. Chapin, to him and to his family in honor of the event. The portrait was the work of Miss Beck, of Philadelphia, an artist of much more than local reputation. It is hoped that the funds already subscribed will permit its reproduction as a fitting souvenir to the large number who were interested in the celebration of the anniversary but were unable to be present.

Seldom, if ever, do the editors of the JOURNAL OF INSANITY, have the privilege of congratulating a fellow worker in the field of Psychiatry upon the completion of fifty years of successful and increasingly fruitful work in behalf of the insane. In his prolonged and varied service at Utica, Canandaigua, Willard, and Philadelphia Dr. Chapin has displayed versatility, ability and adaptability as a physician and administrator and has secured substantial results, such as have been permitted a few others. His work during the past half century is a part of the history of Psychiatry in America and an honor to it. A steady uprightness of character, broad views of public and private duty, assiduous, constant and conscientious labor for high ideals, these are the secrets of the success of a public career rarely equalled in America.

H.

RESIGNATION OF DR. HURD.—Dr. Henry M. Hurd, managing editor of this JOURNAL, for the past seven years, has resigned that position to the infinite regret of his colleagues on the editorial board. His resignation was accepted by the Council of the American Medico-Psychological Association at St. Louis, solely on condition that he should retain his connection with the JOURNAL in an advisory capacity, a function which he has generously consented to discharge. As such guide, philosopher and friend, Dr. Hurd will temper the wind to the stricken sheep, but, while recognizing his claim to larger leisure, the editorial board cannot

but feel the loss of his active services as editor-in-chief. Editors, like poets, are born, not made; Dr. Hurd is to the manner born. Readers of the *AMERICAN JOURNAL OF INSANITY* owe him a large debt of gratitude for a loyalty and efficiency to which he has never set bounds, not even such as a proper regard for health might have prescribed. In moments snatched precariously from a busy life of administration as the chief executive officer of a large hospital, he has toiled over copy and proof; wielded his own effective and fluent pen in original article, review, or editorial; and has controlled the policy of the *JOURNAL* in all its departments in a way that has raised the standard of its service to alienists the world over; won the admiration of his co-editors and compelled the recognition of the man behind the pen by all who have enjoyed the product of his labor. The *JOURNAL*, through its editors, doffs its cap to him and is sure that its readers everywhere will share the act and wish him peace in his less exigent duties.

As already announced, the vacancy on the editorial staff was filled by the appointment of the well-known Canadian alienist, Dr. Charles K. Clarke, of Kingston, Ontario, whose contributions to the literature of psychiatry have always been well received. The managing editor is Dr. Edward N. Brush, of the Sheppard and Enoch Pratt Hospital, Baltimore, Md., to whom should be sent all editorial communications. Exchanges, books for review, and business communications should be addressed, as heretofore, to the Johns Hopkins Press, Baltimore, Md. Dr. Brush's connection with this *JOURNAL* began in the old Utica days, twenty-seven years ago, previous to which time he had already seen service as editor of the *Buffalo Medical Journal*. His colleagues will give him the same loyal support which they have given Dr. Hurd.

G. A. B.

THE RESTORATION OF LOCAL BOARDS OF MANAGERS TO THE NEW YORK STATE HOSPITALS.—During the recent political campaign in the state of New York, the management of the state hospitals for the insane, by the outgoing administration, was the subject of much discussion and violent criticism.

The removal from office of the boards of management of all state hospitals by an act which it was alleged had been promoted

by the retiring Governor, and the centralizing of the control of the hospitals in the state lunacy commission aroused special comment and criticism and assumed such importance in the campaign that both candidates for Governor felt called upon to pledge themselves to favor a return to local boards of management for the different hospitals in the event of election.

The feeling against the policy of the retiring administration in regard to the state hospitals was so great, and the suspicion that the candidate on the Republican ticket would be, if elected, in a large measure controlled in these and other matters by his predecessor, so wide-spread, that he undoubtedly lost many votes in consequence.

We read with pleasure, therefore in the message of the Governor-elect to the legislature that he favors an amendment to the law of 1902, which shall provide for local boards of management.

Governor Higgins says:

"The management of the state hospitals for the insane, fourteen in number, with a total number of patients on October 1, 1904, of 25,019, was completely centralized by legislation of 1902 abolishing the boards of managers of the various hospitals and leaving with the commission on lunacy complete jurisdiction, both as to financial control and internal administration. The advantages of centralized control of the financial operation of the hospitals are evident. It is of the utmost importance, however, that this great system of hospitals, involving the expenditure of so large a sum of money annually, and the care of so many thousands of peculiarly unfortunate and defenseless persons, should rest on a broad basis of public interest and public confidence and should retain the co-operation of philanthropic citizens throughout the state. In my opinion this can best be secured by leaving the control of all financial matters, as at present, in the hands of the commission, and by providing for each hospital a board of managers, in general charge, through the superintendent, of the internal affairs of the hospital."

It will be noted that the Governor says the care of the insane should rest on the broad basis of "public interest and public confidence." It was to secure public confidence and awaken public interest as a result of this confidence, that the lunacy commission of New York State, as is also true of lunacy commissions wherever appointed, was first created.

Charges of improper treatment, of reckless or unnecessary expenditure of money, of extravagant buildings, and the like were made regarding the New York hospitals from time to time, as they have been made concerning other institutions. The managers and the medical officers replied to these, and were investigated by legislative committees, which sometimes seemed earnestly in search of truth, and at others in search of an excuse for creating vacancies which might be filled by their favorites.

It was felt that an impartial lunacy commission, a permanent committee of inspection and inquiry, would restore confidence where lacking, put in motion the proper and always adequate machinery of the law to correct abuse, and at the same time protect not only the patients from unjust detention or improper treatment, but also the officers of the hospital from unjust and sensational charges. Had the commission been content to execute its only proper function, that of supervision, and to make reports and recommendations after conference with the boards of management and the medical officers of the hospitals, nothing would have had a greater influence in awakening "public interest" and restoring "public confidence," but alas, such things were not to be.

The craving for power and authority which attacks many men and some public bodies apparently was too great to be resisted, or possibly others saw an opportunity in giving the lunacy commission almost autocratic power, to make use of that power in some way to forward their own purposes. Whatever explanation is correct, the fact remains that year by year down to 1902 saw increased power placed in the hands of the commission and diminished power or opportunity for initiative left in the hands of the managing board or the medical officers. At last those in power recognized that the fiction of boards of managers in charge of the hospitals had become a farce and so the legislature obeyed the mandate which came from somewhere and the managers were legislated out of office. What has been the consequence? "Public confidence" has not been increased, but the contrary.

When allegations against the hospitals were answered by the commission, the obvious reply came: "You are defending that for which you are responsible, as the sole autocratic central managing and dispensing power. What we want is some unbiased, un-

prejudiced inspection and inquiry into these charges." As to inspection and inquiry the time of the commission was soon so taken up by reading and criticising estimates, discussing the price of soap, fish and shoe-strings, or the fit and style of a hospital employee's uniform, that visits of inspection were of necessity few and far between, and in time it became necessary to create an additional state officer, a medical inspector to perform this function.

If, however, public confidence was not increased, public interest was awakened, and it is to this public interest we believe that the Governor-elect has responded in his message.

Little can be said possibly in criticism of centralized control of the financial operations of the hospitals, if by that is meant centralized supervision and criticism, but the expenditure, through one office or board, itself apparently independent of any superior scrutiny or control, of the vast sum annually expended by the state of New York for the support of its dependent insane, seems to us to involve dangers, the possibility of which should be well considered. No suggestion of criticism of the lunacy commission has, that we are aware of, been heard or implied, and at the same time we have not heard that the commission has sought in any way to be relieved of the burden or has seemed to appreciate that it in any way interfered with its legitimate functions, which we must insist could be of far greater value to the state and its wards if thoroughly exercised.

These functions we believe to be those of an impartial, unbiased board of inspection, advisory and not mandatory; quick to put in operation methods to correct abuse or wrong, equally quick to repel unjust assault and accusation.

Under the present circumstances such an unbiased and unprejudiced view of the situation seems impossible.

TWO NOTABLE REVIEWS.—Our readers will, we believe, be much interested in the letter from France published in this number, and in the reproduction from *The Journal of Mental Science* of the presidential address of Dr. R. Percy Smith before the Medico-Psychological Association of Great Britain and Ireland.

Dr. Parant reviews the subject of *Dementia Praecox* from the standpoint of French alienists, and in bringing together in a

most comprehensive manner the opinions of his confrères has made a most valuable contribution to the literature of the subject.

The address of Dr. Smith is at the present time of much interest, and his attempt to place our conception of paranoia in a clearer light will, we are sure, be appreciated by our readers, as it must have been by his audience. British alienists have not readily accepted the term paranoia, and no doubt Dr. Smith's presentation of the subject will awaken interest and stimulate clinical observation on their part.

THE ANNUAL MEETING.—The annual meeting of the American Medico-Psychological Association will be held at San Antonio, Texas, April 18 to 21, inclusive.

Arrangements are being perfected by Dr. Dent, the secretary, to secure reduced rates of fare to members of the association, and those intending to be at the meeting should notify him as early as possible. Already a number of papers have been definitely promised, and others will no doubt be forthcoming. The annual address is to be delivered by Dr. James T. Searcy, of Tuscaloosa, Alabama.

FIFTH INTERNATIONAL CONGRESS OF PSYCHOLOGY.—The Fifth International Congress of Psychology will be held at Rome from April 26 to 30, 1905. Prof. Guiseppe Sergi is president of the committee of arrangements, and Dr. Sante de Sanctis is vice-secretary general. Those desiring to join the congress may address the latter at 92, Via Depretis, Rome. The congress will be divided into four sections, as follows: I. Experimental Psychology (psychology in its relation to anatomy and physiology; Psychophysics; comparative psychology). II. Introspective Psychology (psychology in its relation to philosophic sciences). III. Pathologic Psychology (hypnotism, suggestion and analogous phenomena; psychotherapy). IV. Criminal, pedagogic, and social psychology.

CORRECTION.—REVIEW OF ADOLESCENCE.—In the review of G. Stanley Hall's "Adolescence" in the last number through an accident, the name of the writer, J. S. Moore an advanced student of philosophy at Harvard University was omitted. So careful and thoughtful a review ought not to be impersonal.

THE ANNALS OF SURGERY completes, with the December number, its fortieth volume, and to celebrate the occasion enlarges this number to 280 pages, 232 of which are occupied by seventeen original articles. A short editorial note outlines the history of the Annals. This is of much interest to those who are not familiar with the origin and development of this journal. It was the outgrowth of Annals of Anatomy and Surgery which for three years was edited and published by Dr. Louis S. Pilcher and Dr. George R. Fowler, the former of whom has been continuously chief editor of the Annals since its foundation. We extend our heartiest congratulations to Dr. Pilcher and his collaborators not only upon the excellence of this anniversary number but upon the record which they have established in the last forty volumes.

Obituary.

HENRY E. ALLISON, M. D.

Henry E. Allison, M. D., was born December 1, 1851, at Concord, N. H., a son of William H. and Catherine (Anderson) Allison. He received his preliminary education at the public schools of his native city, later attending Kimball Union Academy at Meriden, N. H., where he graduated in 1871. In the fall of the same year he entered the classical department of Dartmouth College. He was elected president of the class in his Senior year, and graduated with honors in 1875. After graduation, in the fall, he taught the high school of Hillsborough Bridge, N. H., and during the following year attended the full course of lectures and instruction at Dartmouth Medical College. In June, 1878, he received the degree of M. D. at Dartmouth, and in August commenced the practice of his profession in the capacity of an assistant physician at the Willard Asylum, N. Y., an institution then containing some twelve hundred patients. Here he remained in charge of various medical departments of the service until March, 1883, when he resigned, although strong inducements were offered him to remain. After pursuing a post-graduate course at the New York Polyclinic, he commenced the general practice of medicine at Waterloo, Seneca County, N. Y., where he remained some fourteen months, meeting with excellent success. During this time (1883-'4) he served as town physician. At the urgent request of the board of trustees of the Willard Asylum, he returned in 1884 to that institution as first assistant physician, passing the State Civil Service examination for that position held in New York City. On July 1, 1889, he was appointed medical superintendent of the State Asylum for Insane Criminals at Auburn, Cayuga Co., N. Y., at that time containing two hundred and nineteen patients. By virtue of this office he also became, by statute, a member of the commission created by the Legislature to erect a new asylum for insane criminals which was founded

at Matteawan, Dutchess County, and to which, upon its completion, the inmates of the old Auburn asylum were transferred April 25, 1892. This new institution is now known as the Matteawan State Hospital, of which Dr. Allison was the medical superintendent and treasurer. The total cost of the buildings and grounds was in the neighborhood of \$900,000; the hospital has accommodations for five hundred and fifty patients.

Dr. Allison became a member of the Seneca County Medical Society in 1879, and was elected president of the society in 1886; he was also president of the Seneca County Medical Association. He was a member of the Dutchess County Medical Society, the Newburgh Bay Medical Society, and of the American Medico-Psychological Association, and an honorary member of La Société de Médecine Mentale, of Belgium.

On October 8, 1884, Dr. Allison was married to Miss Anna M. DePuy, daughter of Louis and Sabina E. (Schoonmaker) DePuy, of Kingston, N. Y., and four children have come from this union; Catherine DePuy, Elizabeth Shand, William Henry and Anna. On February 24, 1889, at Ovid, N. Y., he united with the Presbyterian Church, and was later a member and an elder of the First Reformed Dutch Church at Fishkill Landing, N. Y. Socially, he was a member of Beacon Lodge, No. 283, F. & A. M.; of the Dartmouth Medical College Association of New York, and of the Association of the Alumni of Dartmouth College.

Such is the narrative of Dr. Allison's life and work. On November 12, 1904, his friends were astonished to learn that he was dead, after having been confined to his bed for three weeks with nephritis. Always modest, and even diffident, he had given no sign of the burden he carried. The vexations and anxieties of his administration he confided to none, and none suspected the insidious undermining of his strength. He organized and developed the Matteawan State Hospital. His patience, his attention to detail, his conscientiousness had been severely taxed, and he was unable to resist the more or less acute disease which terminated his life. When Governor Black assumed office, he inquired if Dr. Allison, a class-mate of his at Dartmouth College, was in the service of the State, and said, "If he is the same Allison I knew at College, he is an honest man, and must not be dis-

turbed." Who can measure the value of such honesty to the State? Anything less than absolute uprightness in the organization and administration of such a large public institution as the Matteawan State Hospital would have meant unlimited hardship for hundreds of patients, the violations of financial obligation and the waste and abuse of a vast property. That Dr. Allison fulfilled the promise of his youth is shown by the fact that of the fifteen years of the supervision of an institution for the custody of the most turbulent and degenerate of mankind, no single complaint, either public or private, has been heard. No better example can be adduced of the potency of gentle, undemonstrative firmness. It is a sad reflection that the penalty of perfection of character is the sacrifice of so valuable a life.

The loss of Dr. Allison is serious. He inspired the confidence of acquaintances and the affection of his friends. The genial side of his nature was shown in his relations with children whom he always attracted. He possessed the rare faculty of never offending and of never sacrificing his principles. He was calm and gentle, and his ways were ways of pleasantness and all his paths were peace. In the many contributions made by Dr. Allison to the special departments of mental medicine and sociology, and in his wise organization of the State Hospital at Matteawan, he has left us the record of a well-spent life, which should have a proper and lasting memorial.

Dr. Allison has published the following papers and monographs:

- "A Case of Multiple Tubercular Tumor of the Brain." (New York Medical Record, August, 1882.)
- "Cerebral Lesions in the Chronic Insane." (Alienist and Neurologist, July, 1885.)
- "Moral and Industrial Management of the Insane." (Alienist and Neurologist, April, 1886.)
- "Mental Changes Resulting from the Separate Fracture of Both Thighs." (American Journal of Insanity, July, 1886.)
- "Notes in a Case of Chronic Insanity." (American Journal of Insanity, April, 1887.)
- "An Historical Sketch of Seneca County Medical Society." (Press of Brandow & Speed, Albany, 1887.)
- "On a General System of Reporting Autopsies in American Asylums for the Insane." Read before the Association of Medical Superintendents

- of American Institutions for the Insane, Newport, R. I., June, 1889. (American Journal of Insanity, October, 1889.)
- A short contribution to "De La Responsabilité Atténuee," by Henry Thierry, Paris, 1891.
- "On Motives which Govern the Acts of the Criminal Insane." Read before the Association of Medical Superintendents of American Institutions for the Insane, Washington, D. C., May, 1892. (American Journal of Insanity, October, 1892.)
- "The Insane Criminal." (The Summary, December, 1892.)
- "Insanity Among Criminals." Read before the American Medico-Psychological Association, Philadelphia, Pa., May, 1894. (American Journal of Insanity, July, 1894; Criminal Law Magazine and Reporter, Vol. 16, 1894.)
- "On the Care of the Criminal Insane in the State of New York." Read at the Annual Meeting of the Trustees and Superintendents of the State Hospitals of New York, Matteawan, October, 1894. (Conglomerate, October, 1894.)
- "Some Relations of Crime to Insanity and States of Mental Enfeeblement." Read at the Annual Meeting of the American Medical Association, Atlanta, Ga., May, 1896. (Journal of the American Medical Association, September, 1896.)
- "Simple Melancholia and its Treatment." Read before the Newburgh Bay Medical Society. (Medical Record, January, 1897.)
- Four Annual Reports of the "State Asylum for Insane Criminals," 1889-92, and Eleven Annual Reports of the "Matteawan State Hospital," 1893-1903, inclusive.
- "What Constitutes an Insane Criminal and What Status Does He Occupy?" Read before the Prison Association of New York at its annual conference held in New York City October 7-9, 1897. (Albany Medical Annals, December, 1897.)
- "Method of Securing Health of Insane Convicts." (Journal of Social Science, December, 1897.)
- Medico-Legal Notes. "One Aspect of Feigned Insanity." (American Journal of Insanity, April, 1898.)
- "Insanity and Homicide." Read at the Annual Meeting of the American Medico-Psychological Association held at St. Louis, Mo., May, 1898.
- A Review of "Medical Jurisprudence of Insanity or Forensic Psychiatry," S. V. Clevenger, M. D. (American Journal of Insanity, October, 1898.)
- "Provision for Criminal Insane." A discussion before the National Prison Association of the U. S., at the Prison Congress held at Indianapolis, October 15 to 19, 1898. (Albany Medical Annals, July, 1899.)
- Congrès International, pour l'étude des questions relatives au Patronage des condamnés, des enfants moralement abandonnés et des aliénés, 3me Session, Anvers, 1898. 3e Section: Vagabondage et mendicite.— Patronage des aliénés. 4e Question: Quel doit être le rôle du Patronage a l'égard des aliénés avant, pendant et après leur internement dans la maison de sante? Rapport presente par M. Allison.

- Medico-Legal Notes. "Responsibility in Alcoholism," "Curative Aspect of Crime." (American Journal of Insanity, October, 1898.)
- Medico-Legal Notes. "Criminal Insane in the United States and Foreign Countries," "Punishment of the Insane," "Damages from Alleged Negligence Arising from Insanity," "Power of Attorney Revoked by Insanity," "The English Inebriates Act." (American Journal of Insanity, April, 1899.)
- "The Care and Custody of the Convict and Criminal Insane." Remarks before the 29th Annual Congress of the National Prison Association held at Cleveland, Ohio, September 22-26, 1900.
- Medico-Legal Notes. "Competency and Credibility of Insane Witnesses," "Insanity and Christian Science." (American Journal of Insanity, April, 1901.)
- Medico-Legal Notes. "Immigration of the Defective Classes," "Case of Feigned Insanity." (American Journal of Insanity, April, 1902.)
- "Medico-Legal Aspects of Insanity," in 1902 edition of Wood's Reference Hand-Book of The Medical Sciences.
- "Hospital Provision for the Insane Criminal." Read at the Annual Meeting of the American Medico-Psychological Association held at Washington, D. C., May, 1903.
- "Insanity in Penal Institutions and its Relations to Principles of Penology." Read at the National Prison Congress held at Louisville, Ky., October 3-8, 1903. (Albany Medical Annals, December, 1903.)
- "Defective Inmates of Penal Institutions." Read at the National Prison Congress at Quincy, Ill., October, 1904.

In addition, although not seeking the work, he has been frequently called upon to testify as an expert medical witness in various important trials.

MERRICK BEMIS, M. D.

Dr. Merrick Bemis, for seventeen years Medical Superintendent of the Worcester Insane Asylum, Worcester, Mass., died at his home in that city on the third of October last.

Dr. Bemis was born in Sturbridge, Massachusetts, May 4, 1820. His parents removed to Charlton, thence to Brookfield, during his early childhood, and he was brought up on a farm, with such advantages as the country district schools afforded. A natural thirst for knowledge, however, led him to seek further improvement, and he was able by his own efforts to pay his way through Dudley Academy, walking each way every week the sixteen miles between his home and that place. With money obtained by teach-

ing school in the winter, he entered Amherst Academy, with the intention of pursuing the full course in Amherst College, but a severe illness of long duration compelled him to abandon this purpose. He was engaged for several years in teaching school in Brookfield. At the age of twenty-two he began the study of medicine, and soon after went to Boston, and remained five years in the office of Doctor Winslow Lewis, leaving the office during the winter months, however, that he might, by teaching, defray the expenses of his medical studies, in the meantime attending medical lectures at Pittsfield, Massachusetts, and Castleton, Vermont, receiving his degree from the college in the latter place in 1848. On November 14th of the last-named year, Doctor Bemis went to Worcester to take the place temporarily of one of the physicians in the State Lunatic Hospital, and was soon after appointed assistant physician to Doctor George Chandler, who was superintendent of that institution, and continued in that connection eight years. Doctor Chandler resigned at the close of the year 1855, and Doctor Bemis was elected his successor by the trustees. He was granted leave of absence for the purpose of travel and study in Europe, and after an extended tour of several months returned and took charge of the hospital in the summer of 1856. In this station he remained seventeen years, resigning in 1872. During this period several important changes in methods and administration were carried through, and the institution maintained a high reputation among similar establishments throughout the country. He was the first to advocate the employment of female physicians in asylums, an example which soon had many followers. In the closing years of his service at Worcester, Doctor Bemis purchased the various estates now constituting the hospital property at the lake, and submitted plans for the erection of buildings, and, in view of the change of location, again, in 1868, visited Europe to inspect hospitals and treatment of patients there. Soon after his resignation he established the private asylum for the care and treatment of women afflicted with various forms of mental and nervous disease, at Herbert Hall in Worcester.

This large mansion, situated on Salisbury Street, was erected in 1857 by the late Rev. Nathaniel T. Bent for the purpose of a young ladies' school, and the property, which includes an estate

of about ten acres, came into Doctor Bemis's possession in 1873. This institution he conducted with great success to the time of his death; his son, Dr. John M. Bemis, being associated with him in the management for the last few years. As an expert in insanity, Doctor Bemis's services were frequently solicited in consultation and in courts.

Doctor Bemis was a member of the Board of Aldermen in 1861, 1862 and 1863, and he served on the School Board during the same period. During the late Civil War he took an active interest in the welfare of the soldiers and their families, and contributed much toward their relief. All matters of public concern have had his ready sympathy and active assistance to the extent of his ability. He had been a director of the Mechanics National Bank, was a member of the Horticultural Society, the Worcester Society of Antiquity and the Natural History Society, and was for several years, and at the time of his death, president of the last-named body. He was also a life member of the Pilgrim Society. He was a member of the Massachusetts and Worcester District Medical Societies and of the American Medical Association, also of the New England Psychological Society, and one of the oldest members of the American Medico-Psychological Association.

Since 1887 he had been one of the State trustees of the Baldwinville Hospital Cottages for children, and was president of the Corporation. In this connection it may be stated that Doctor Bemis was one of the first American physicians to advocate the division of hospital buildings for the insane into separate cottages or pavilions.

Doctor Bemis was a book-lover of more than ordinary fervor, and gathered, through a long series of years, a fine library, which comprises many rare editions and costly works of art. In the companionship of these volumes he found solace and diversion from the exacting duties of his profession, and in their possession one of the chief gratifications of life.

Doctor Bemis married, January 1, 1856, Caroline A. Gilmore. Her father was a physician of Brookfield for more than thirty years. They have one son, John Merrick Bemis, a physician, member of the American Medical Association, and of the Massachusetts and Worcester District Medical Societies.

Abstracts and Extracts

Paranoia. By R. PERCY SMITH, M. D., F. R. C. P. *Journal of Mental Science*, October, 1904.

[Dr. Smith, in his annual address, as President of the Medico-Psychological Association of Great Britain and Ireland, delivered at the sixty-third annual meeting of that body, in London, July 21, 1904, took for his subject "Paranoia." He has presented such a valuable review of the subject from the standpoint of a British alienist, that the reproduction of the address seems desirable.]

The subject which I have chosen for my address to-day is one which does not appear to have been touched upon by former presidents. It is that of Paranoia—its position as a clinical entity, its relationship to other mental disorders and the consideration of the claim of its supporters that it is to be regarded as a primary disorder of intellect, in contradistinction to what have been called the affective mental disorders. That this cannot be considered a new subject is true inasmuch as the term "paranoia" has been in use in German literature on mental diseases for the last thirty years, being first used apparently by Kahlbaum in 1874 and as a generic term for systematized delusional states by Krafft-Ebing in 1879 and by Mendel in his article "Paranoia" in Eulenberg's *Realencyclopädie*.

Spitzka, of New York, appears first to have used the word in the English language and adopted it as a preferable term to monomania, in the second edition of his work on insanity published in 1887.

In this country the term "paranoia" seems at first to have been received with little favor, and in fact until the tragic case of King Ludwig II of Bavaria, in 1886, it was little heard of, and certainly the writers of English text-books on mental disease at that time did not make use of the term.

In Dr. Ireland's article on "The Insanity of King Louis II of Bavaria," at page 150 of his work *Through the Ivory Gate*, is to be found a copy of the certificate signed by four physicians as to the nature of the King's insanity, the first paragraph of which was as follows:

"His Majesty is in a far advanced state of insanity, suffering from that form of mental disease which is well known to alienist physicians of experience as paranoia."

Dr. Ireland's book was published in 1889, and in a foot-note he quotes from Séglas as saying that "paranoia is perhaps the one word in psychiatry that has the most extensive but most ill-defined acceptance"; he speaks of it as mainly used by German and Italian physicians and says the paranoia of Snell is not the same as the paranoia of Westphal or of Meynert or of Krafft-Ebing. He offers the following definition: "Paranoia is a

mental affection of hereditary origin, generally of a slowly advancing character, with illusions and hallucinations and delusions, often of persecution and grandeur. Sometimes the two varieties of delusions are combined. The emotional faculties are seldom deeply affected, and the logical power is the last to suffer, the patient reasoning acutely from false premises. The mental enfeeblement does not appear to be great. In the chronic form the disease is regarded as incurable. Some writers will not admit of an acute form of paranoia." In the works of Maudsley, Blandford and Savage the word is not to be found, nor in Bevan Lewis's *Text-book of Mental Diseases* (1889).

In the third edition of Clouston's *Mental Diseases*, published in 1892, there appeared for the first time a short paragraph on paranoia at the end of the chapter on monomania. Again in 1892 there appeared in the *Dictionary of Psychological Medicine* an article on paranoia by the late Dr. Hack Tuke beginning with the sentence "The use of this word has become very frequent in Germany and in the United States, but it has not obtained favor in Great Britain." He defined it as meaning "a condition of which chronic and systematized delusion is the essential sign," referred to it as synonymous with the German *Verrücktheit*, and pointed to the fact that while Griesinger held that emotional disturbance was the first link in the chain, Koch and the majority of German alienists did not agree with this view. The question of the primary affective or primary intellectual disorder in paranoia, *Verrücktheit*, or delusional insanity, I shall frequently refer to. The references to paranoia in *The Journal of Mental Science* for the past twenty years are to be found almost entirely in reviews of books and papers published in other countries, with, however, one important exception, namely the paper "On so-called Paranoia" read by Dr. E. L. Dunn of Wakefield Asylum before the Psychology Section of the Annual Meeting of the British Medical Association, held at Nottingham in July, 1892, and published in *The Journal of Mental Science* for January, 1893. He referred to the Greek word "paranoia" as simply meaning madness, and as now being used synonymously with the German "*Wahnsinn*," and "*Verrücktheit*" and implying systematized insanity. He gave a review of the history of the recent developments of the paranoia question up to that date, pointing out the initial difficulty that while the term is useful if limited to the class of cases termed "paranoia persecutoria" by German writers and "*délie chronique*" by Magnan and other French writers, where there is chronic mental disorder, whether associated with neurotic or insane inheritance or not, yet that there is great confusion introduced by the comprehension in this group of acute forms first described by Westphal in 1878 and admitted by Meynert, Amadei, Tonnini and others, although denied by Krafft-Ebing, Morselli, Tanzi, and Riva. Dunn himself objected to the inclusion of acute forms. With regard to the diagnosis of paranoia from other forms of mental disorder, especially from melancholia, Dunn made the remark "The affective state is always secondary to the delusive, and is the logical reaction to it," thus adopting what I think

is one of the fallacies of continental writers with regard to this aspect of the matter. In the discussion which followed, the late Dr. Hack Tuke referred to the time when English alienists were thought behindhand in not adopting the term "Verrücktheit," and that now "paranoia" was substituted for it.

But if English thought moves slowly, it as a rule moves soundly, and I think it will be acknowledged that there has been very good reason for not adopting without much consideration a grouping of cases as to which continental writers are still by no means unanimous.

I well remember being struck by the way in which foreign visitors to Bethlem Hospital between the years 1885 and 1898 were inclined to call a very large proportion of the cases shown to them cases of "paranoia," so that whatever the original conception was, it became evident that there was a danger of the term being applied to most cases in which hallucinations and more or less fixed delusions were present regardless of their history, many acute cases becoming thus grouped together which English observers regarded as not belonging to the same category.

I wish next to refer to the important discussion on the limitation and differential diagnosis of paranoia which took place at the meetings of the Psychiatrische Verein of Berlin, in 1893 and 1894. The full account of this is to be found in the 51st volume of the *Allgemeine Zeitschrift für Psychiatrie*, 1895. To Dr. Cramer, at that time the Assistant Physician of the Eberswalde Landesirrenanstalt, was referred the task of summarizing the existing views and drawing up a report on the subject for the purpose of discussion. In Cramer's paper on the "Abgrenzung und Differential-Diagnose der Paranoia," published in the volume referred to, the whole matter will be found to be very fully stated, and I have much pleasure in acknowledging my indebtedness to him for much of the material of this address.

Cramer begins by stating that although there is a fair agreement that mania and melancholia are primarily "Stimmungsanomalien" (abnormalities of mood), the different meanings of authors in those psychopathies which do not come into this group are irreconcilable. He refers to Westphal's description of Primäre Verrücktheit (*Allg. Zeitsch.*, Bd. XXXIV, p. 252) and Mendel's article on paranoia, already referred to, as being very clear and trenchant, but says that hopes of unanimity were not fulfilled, because Werner in his monograph on paranoia (Stuttgart: Enke, 1891) writes that now with the introduction of the word "paranoia" a confusion and a host of expressions for the same form of disease have been put forward. Cramer starts by grouping psychoses into:

1. Stimmungsanomalien (mania and melancholia).
2. Paranoia.

His endeavor is to show that all disorders described under the names "Wahnsinn," "Verrücktheit," "Paranoia," "Verwirrtheit," "Amentia," "Asthenisches Delirium," and others have a common characteristic disturbance of mental function.

Cramer gives a very comprehensive summary of the literature on the subject, to some of which we must refer.

He quotes Hoffman ("Ueber die Eintheilung der Psychosen," *Allg. Zeitsch.*, Bd. XIX) as understanding by "Verrücktheit" a disease in which a special motive (hallucinations and delusions) affects judgment, feeling, and conduct, and becomes the groundwork of a "Gedankensystem," the disease being free from the internal and external signs of "affect" (disturbance of feeling or emotion).

He quotes Westphal (*Allg. Zeitsch.*, Bd. XXXIV, p. 252) as being the first who spoke of an acute development and course of "Verrücktheit," as recognizing Sander's group of cases of "originäre Verrücktheit," as describing a form of "abortive paranoia" characterized by imperative ideas, and as saying that a "formal disturbance of thought may be absent but may increase up to complete confusion."

Westphal further lays down that "the essential in Verrücktheit is the abnormal process in ideation," and that mood, feeling, and "affect" are essentially dependent on the contents of the ideas and sensory delirium. ("Stimmung, Gefühle und Affecte sind wesentlich abhängig von dem Inhalte der Vorstellungen und Sinnesdelirium.")

Cramer quotes Fritsch ("Die Verwirrtheit," *Jahrb. f. Psych.*, Bd. II, p. 27) as giving to the acute cases the name "Verwirrtheit" (confusion) in contradistinction to Westphal's "Verrücktheit" and essentially different in onset, course, and mental condition from it.

He quotes Meynert ("Die acute hallucinatorische Form des Wahnsinns und ihr Verlauf," *Jahrb. f. Psych.*, Bd. II, p. 181) as holding that "acute primäre Verrücktheit" differs from primäre Verrücktheit or Wahnsinn in the absence of typical growth from hypochondriacal or persecutory stages, and in the absence of logical growth by reasoning, but is, on the contrary, an acute hallucinatory state with confusion. Meynert, however, thinks the change of mood to be dependent on hallucinations.

Meynert later (*Klinische Vorlesungen über Psychiatrie*, 1890) elaborates his earlier hallucinatory Verwirrtheit, which he calls by the unfortunate term "amentia," and while distinguishing the fixed delusional conditions of paranoia allows that the latter may often include conditions of exhaustion transitional to amentia.

Schüle (*Klinische Psychiatrie*, 1886) uses "Wahnsinn" as equivalent to paranoia, dividing into acute, chronic, and attonic groups, and holds that both in acute and chronic cases the mood is simply reactive and secondary to hallucinations.

Salgo (*Compendium der Psychiatrie*, 2 ed.) belongs to those who hold that in Verrücktheit there must be psychical weakness associated with systematized hallucinations and delusions, and that acute hallucinatory Verwirrtheit, under which he includes cases of acute delirium, may either be primary or may interrupt the course of chronic Verrücktheit.

Wille ("Zur Lehre von der Verwirrtheit," *Arch. f. Psych.*, Bd. XX, p. 228), again, recognizes Verwirrtheit with hallucinations and illusions, and

also an "acute paranoia," characterized by systematized and constant delusions underlying the confusional delirium.

Meyser ("Zum sogenannten hallucinatorischen Wahnsinn," *Allg. Zeitsch. f. Psych.*, Bd. XLII, p. 113) uses for both Verwirrtheit and acute paranoia the name "asthenisches Delirium," and includes in it delirium from morphia, chloral, carbonic acid, etc.

Mendel ("Paranoia," *Eulenberg's Realencyclop.*) groups these cases together, calls the disease paranoia, and distinguishes a primary and secondary form: "Die primäre Paranoia ist eine funktionelle Psychose die characterisch ist durch das primäre Auftreten von Wahnvorstellungen." With regard to feeling, he says: "Das Fühlen richtet sich nach dem Inhalt der Wahnvorstellungen und ändert sich mit diesen." He objects to Westphal's abortive form of Verrücktheit as belonging to obsessions or imperative ideas.

Mendel divides primary paranoia into simple and hallucinatory, and each of these into acute and chronic. It is necessary to give his conclusions with regard to Paranoia hallucinatoria acuta. It has a prodromal stage, followed by general delirium, with great disorder of consciousness and hallucinations of nearly all senses, rapid flight of ideas and "allgemeine Verwirrtheit" or general confusion.

Mendel's description shows how comprehensive had become the conception of paranoia, as including conditions known to others as confusional insanity and acute delirium.

Werner, on the other hand (*Die Paranoia*, 1891), tried to combine the different views as to paranoia, but entirely excluded "acute Verwirrtheit, (Meynert's amentia).

Kirchoff (*Lehrbuch der Psychiatrie*, Leipzig, 1892), on the contrary, divides paranoia into—(1) Wahnsinn, (2) Verrücktheit, (3) Verwirrtheit, saying that in all paranoia there is systematization of delusion. Wahnsinn he considers an acute part of paranoia with delusions and hallucinations and marked emotional disorder, while in Verrücktheit the "affect" is only a chance condition. Verwirrtheit he considers only a secondary condition after Wahnsinn and Verrücktheit, and says: "Verwirrtheit may also show the elements of paranoia before or after their full development, at one time the foundation stones, at another the ruins of the structure."

Serbski ("Ueber die acuten Formen von Amentia und Paranoia," *Allg. Zeitsch. f. Psych.*, Bd. XLVIII, p. 329) endeavors to separate amentia acuta from paranoia acuta, but considers it difficult. He claims for amentia—(1) confusion, (2) "affect," either throughout or in certain stages only, (3) disturbance of association, very marked at the height of the disease. He recognizes that transient confusion may sometimes be present in chronic primary Verrücktheit.

Schönthal ("Ueber die acute hallucinatorische Paranoia," *Allg. Zeitsch.*, Bd. XLVIII, p. 379) separates Verwirrtheit from acute paranoia as follows:

"Acute paranoia (Wahnsinn) is distinguished from Verwirrtheit by the

more detailed structure of the delusions and the greater clearness of mind, as opposed to the more delirious type of the changing delusions and marked confusion of consciousness in *Verwirrtheit*."

In referring to the works of French authors Cramer gives full credit to the work of Lasègue in describing "*déire des persécutions*," Morel's description of an early hypochondriacal stage passing into delusions of persecution and grandeur, constituting "*folie systematisée*," and to the works of Foville, Legrand du Saulle, P. Garnier, Jaquet, and Falret with regard to these states.

He gives also a good summary of the prolonged discussion in the *Société Médico-Psychologique* of Paris in the year 1888 on the question of the relationship of insanity to degeneration, and the question of establishment of a special form of chronic systematized delusional insanity, to which the name "*déire chronique*" was given by Magnan, and which he separated entirely from "*folie des dégénérés*," but without his views meeting with universal acceptance.

With regard to the acute forms included under paranoia by German writers, Cramer quotes Chaslin as claiming that writers in France first described cases which are neither mania, melancholia, nor "*déire des dégénérés*." He states that Chaslin describes the condition of "*confusion mentale primitive*" (acute onset, often exhaustive or toxic in origin, with confusion, loss of association, changing emotion or apathy) as synonymous with the following very comprehensive list, in which will be noticed the German "*acute primäre Verrücktheit*," *hallucinatorischer Wahnsinn*, *Verwirrtheit*, mania *hallucinatoria*, *amentia*, and *paranoia acuta*, which we have already referred to.

Chaslin identifies *confusion mentale primitive* with the following:

1. *Démence aigüe* (Esquirol, Brierre de Boismont).
2. *Stupidité, stupeur* (Georget, Delasiauve, Dagonet).
3. *Confusion, confusion hallucinatoire* (Delasiauve).
4. *Déire de depression* (Lasègue).
5. *Déire d' inanition* (Becquel).
6. *Torpeur cérébrale* (Ball).
7. *Acute primäre Verrücktheit* (Westphal).
8. *Hallucinatorischer Wahnsinn* (v. Krafft-Ebing).
9. *Hallucinatorische Verwirrtheit* (Meynert, Fritsch).
10. *Verwirrtheit* (Wille).
11. *Acutes asthenisches Delirium* (Mayser).
12. *Acuter Wahnsinn* (Schüle).
13. *Hallucinatorische Verworrenheit* (Konrad. Scholz, Salgo).
14. *Asthenische und hallucinatorische Verwirrtheit* (Kraepelin).
15. *Hallucinatorisches Irresein* (Fürstner).
16. *Dementia generalis oder subacuta* (Tilling).
17. *Mania hallucinatoria* (Mendel).
18. *Amentia* (Meynert, Serbsky).
19. *Dysnoia, polyneuritic psychosis* (Korsakoff).

20. Délire sensoriel (Schernschenski).
21. Folie générale (Rosenbach).
22. Paranoia acuta, oder hallucinatoria (different authors).
23. Primary confusional insanity (Spitzka).
24. Acute hallucinatory confusion (Spitzka).
25. Stupor, delusional stupor (Hayes Newington).
26. Acute confusional insanity (C. Norman).
27. Frenosi sensoria acuta (Morselli).
28. Stupidita (Morselli).

Lastly Cramer quotes Ségla's ("Le Paranoia, délires systematisées et dégénérescences mentales," *Arch. de Neurol.*, T. XIII), who does not believe that an acute Verrücktheit in Westphal's sense belongs to paranoia, but approaches more nearly to certain melancholic or maniacal conditions, as saying: "Les observations ne nous ont montré aucun caractère pathologique, qui puisse permettre au moins par un côté de rapprocher cette paranoia aigüe de la chronique, qu'elle soit dégénérative ou non."

Cramer refers but little to English writers, and evidently is inclined to regard their views as obsolete, and says that Italian writers have either followed the French or the German school.

As the result of his researches Cramer comes to the conclusion that although Wahnsinn, Verrücktheit, and Verwirrtheit (Amentia) must be looked upon clinically as separate disease pictures, they are separated from the simple functional psychoses on the common ground of absence of primary disorder of feeling, and he groups them together as paranoia. He entirely disagrees with Salgo that there is any groundwork of weak-mindedness in Verrücktheit, and says that the "Schwerpunkt" of the disorder is a disturbance in the ideational sphere (Vorstellungssphäre). Paranoia is according to him a functional psychosis to be separated from the other great group of functional psychoses with "Stimmungsanomalien."

He acknowledges, however, the difficulty in separating cases of paranoia beginning with subacute course and depressive character, which are very near to melancholia, but begs the question by saying, "These difficulties disappear if one holds firmly to the view that paranoia is a disease of the intellect in which 'affects' only play a secondary rôle." ("Diese Schwierigkeiten lassen sich überwinden wenn man streng daran festhält dass die Paranoia eine Erkrankung des Verstandes ist, bei der die Affecte eine secundäre Rolle spielen.")

Cramer's conclusions are—

1. Verwirrtheit (Amentia), Wahnsinn and Verrücktheit have clinically and genetically a common range of important symptoms.

(a) The ground-symptoms, hallucinations, delusions, and incoherence, are genetically nearly related to one another.

(b) The predominating symptom of Verwirrtheit, of Wahnsinn, and of Verrücktheit is disease of the understanding (Verstandesthätigkeit).

(c) In Verwirrtheit, Wahnsinn, and Verrücktheit the emotions play only a secondary rôle.

(d) Verwirrtheit (Amentia) may appear symptomatically both in Wahnsinn and Verrücktheit.

2. That the points of differential diagnosis between Verwirrtheit, Wahnsinn, and Verrücktheit do not destroy the common groundwork of the three "Krankheits-bilder."

3. That the group of simple uncomplicated functional psychoses with disorder of feeling (Stimmungsanomalien) entails as a second great principal group paranoia (disorder of the understanding).

4. That paranoia is sharply divided from the Stimmungsanomalien and complicated psychoses.

5. That henceforth the definition of paranoia must run:

"Paranoia is a simple functional psychosis. It is characterized by a disease of the intellect (or understanding) in which 'affects' play only a secondary rôle."

In the "Schlusswort" (after the discussion) he modifies this and concludes that the simple functional psychoses fall into three groups—

1. Group of "Stimmungsanomalien," a change in emotion *remaining in the foreground of symptoms*.

2. The paranoia group, characterized by the prominence of disorder of the understanding.

Between these are transitional forms.

3. Ania, marked by loss of understanding and of emotion.

Leaving now the position of paranoia as set out by Dr. Cramer in 1895, I will come down to the present date. For this purpose I have taken the recent editions of the text-books of Krafft-Ebing, Ziehen, and Kraepelin as embodying the German views, and the articles by Drs. Anglade and Arnaud in Ballet's *Traité de Pathologie Mentale*, just published, as embodying the French views on this subject. Cramer, in the historical section of his paper before quoted, summarized the views of the three German professors, but it seemed to me essential to have their views in their more recent publications. Professor von Krafft-Ebing, of Vienna, whose death while the seventh edition of his *Lehrbuch der Psychiatrie* (1903) was passing through the press we must all deplore, has never admitted that paranoia should include acute and curable conditions.

Under the heading of "Psychoneuroses" he puts—

1. Melancholia.

2. Mania.

3. Stupidität, or primary curable dementia.

4. Hallucinatory Wahnsinn.

5. Secondary Verrücktheit and terminal dementia.

And under the heading of "Psychical Degenerations" he puts—

1. Katatonia.

2. Constitutional affective insanity (folie raisonnante).

3. Paranoia.

4. Periodic insanity.

His "hallucinatory Wahnsinn" includes what other authors have named acute primary Verrücktheit (Westphal), hallucinatory Verrücktheit, mania hallucinatoria (Mendel), and delusional stupor (Newington), and includes many exhaustive, toxic, and post-febrile delirious states and most of the maniacal puerperal psychoses. He has never seen it pass into systematized paranoia, and refuses to recognize the disease as an acute paranoia, although he allows that confusional states may be episodic in paranoia. Even though he takes this view, however, he seems to be unable to shake off the idea that moods and "Affecte" in hallucinatory Wahnsinn are entirely reactive to hallucinations and delusions.

His "secondary Verrücktheit" includes all psychical states in which delusions formed in the primary affective stage (of mania and melancholia) remain as lasting errors of understanding (Verstandesirrtümer) and as more or less stationary morbid groups of ideas, in spite of the subsidence of the original affective disorder. This corresponds with the English "secondary delusional insanity" resulting from acute attacks in which there are fixed delusions, but no definite systematization or elaboration (Mercier's "fixed delusion").

He divides paranoia as follows:

Die Paranoia—

I. Die originäre Paranoia.

II. Die tardive (erworbene) Paranoia.

A. Paranoia persecutoria.

1. Die typische Form der erworbenen Paranoia, unterformen der Paranoia persecutoria; die Paranoia sexualis.

2. Das Irresein der Querulanten und Prozesskrämer.

B. Paranoia expansiva.

1. Die Paranoia inventoria.

2. Die religiöse Paranoia.

3. Die erotische Paranoia.

He also places paranoia neurasthenica and paranoia (sexualis) masturbatoria under the head of mental diseases dependent on constitutional neuroses.

Krafft-Ebing says paranoia is a chronic mental disease occurring exclusively in those damaged by inheritance, and often developing on the basis of constitutional neuroses, the chief symptom of which is delusion.

"These delusions, in contrast to those present in mania and melancholia, are primary creations of the diseased brain independent of any affective origin (jegliche affective Entstehungsgrundlage entbehrende), bound together systematically and methodically by process of conclusion and judgment to a formal delusional structure in contrast to the delirium of 'Wahnsinn.'"

And further: "The point of the disease lies not as in melancholia and mania in primary affective and psychomotor disorder, but in disorder of the sphere of ideation" (Vorstellungssphäre). Krafft-Ebing believes in the

chronic course and slow development of the disease, which, according to him, never ends in dementia; neither has he seen recovery, but only remissions. He does not agree with the view that paranoia is a chronic form of Wahnsinn.

It is a remarkable fact that some of the advocates of the primarily intellectual disorder of mind in paranoia, to the exclusion of affective disorder, are at any rate driven to classify it on an affective basis. Thus we find depressive and expansive forms described, and Krafft-Ebing divides his "tardive," or acquired, paranoia into persecutory and expansive groups.

Let us now see if Krafft-Ebing's claim for the absence of affective disorder in the early stage of the disease is borne out by his clinical description.

In the first place, with regard to "originäre Paranoia," which he considers to be rare, he says there is often early neurasthenia, hysteria, hypochondriasis, and sexual perversion, especially masturbation—conditions in which at any rate affective mental states cannot be excluded; and, further, he says candidates for this disease are psychically slack, dull, sentimental, tending to hypochondriasis and eroticism, and of easy susceptibility in sensitiveness and emotion.

Again, with regard to the cases of paranoia persecutoria developing later in life, the typical form of acquired paranoia, he says, "The subjects of this morbid process are mostly from childhood upwards peculiar, quiet, shy, retiring, hypersensitive, irritable, distrustful people, not rarely also with a tendency to hypochondria."

Surely this condition implies a special aptitude for painful feeling, and with such a history it seems a bold thing to say that the mental disorder when it appears has no affective basis.

He, however, repeats later that emotional disturbances are "sekundäre Affecte" and "the natural, so to speak physiological, reaction to the primary alteration of the Ego."

When speaking of the "Querulanten" he again says: "The candidates for this form of disorder fall early as a result of their egoism, anger, brutal dogmatism (Rechthaberei), and measureless overestimation of self into conflict with their surroundings."

It seems to me that delusional states which arise on this basis cannot be considered to be devoid of a primary affective groundwork.

Again, with regard to the expansive form he says "the nucleus is delusion of distinguished personality, sustained by exalted self-feeling and *partly developed out of it*. The future delusion is already latent in the whole mode of thought and intuition." Here, at least, he allows the possibility of a primary affective state, or at least one existing concurrently with delusion and not merely secondary to it.

When we come to paranoia religiosa, Krafft-Ebing acknowledges that such cases often arise in persons who from childhood have a tendency to excessive religiosity, and points out the frequent association of increasing religious exaltation with eroticism, two conditions in which it seems to me it is absolutely impossible to exclude a primary "Affect" as early as

or earlier than, a purely intellectual disorder. Indeed, the importance of the element of feeling is recognized by Krafft-Ebing when he says that in the first or passive stage the patient "is simply observant and receptive of the *sublime feelings* and hallucinations developing in him," and in the second or active stage the ready delusion makes itself known.

In the so-called erotic paranoia, although it is usually said that the morbid love in these cases is platonic, yet it is impossible to imagine that affective disorder does not occur quite early, and Krafft-Ebing allows that in men "the abnormal characteristics can be recognized early in a tender, sentimental direction of feeling." I do not think I need pursue Krafft-Ebing's views further.

Professor Ziehen, of Utrecht, in the second edition of his *Psychiatrie*, published in 1902, divides the "affective psychoses" (mania and melancholia) sharply from the intellectual, under which he includes "Stupidität" (=acute primary dementia and Newington's anergic stupor) and paranoia (see Table).

His definition is: "We include under the conception of paranoia all those functional psychoses the principal symptoms of which are primary delusions or hallucinations."

Ziehen.

Psychosen ohne Intelligenzdefect.

A. Einfache (simple) Psychosen.

1. Affective Psychosen.

(a) Manie.

(b) Melancholie.

2. Intellektuelle Psychosen.

(a) Stupidität.

(b) Paranoia.

(a) Paranoia hallucinatoria acuta s. amentia. Delirium tremens.

(b) Paranoia hallucinatoria chronica.

(c) Paranoia simplex acuta.

(d) Paranoia simplex chronica.

B. Zusammengesetzte (complex) Psychosen.

1. Aperiodische zusammengesetzte Psychosen.

(a) Secundäre hallucinatorische Paranoia.

(b) Postmanische und postmelancholische Stupidität.

(c) Postneurasthenische hypochondrische Melancholie und Paranoia.

(d) Postmelancholische hypochondrische Paranoia.

(e) Katatonie.

2. Periodische zusammengesetzte Psychosen.

(a) Periodische Manie.

(b) Periodische Melancholie.

(c) Circuläres Irresein.

(d) Periodische Paranoia.

(e) Circuläre Paranoia.

(f) Periodische impulsive Zustände.

If delusions are primary, it is paranoia simplex, and if hallucinations, paranoia hallucinatoria, each being divided into acute and chronic.

He agrees with Westphal and differs from Krafft-Ebing in including acute and curable cases of delirious type under paranoia and especially under paranoia hallucinatoria acuta, giving as synonyms:

Hallucinatory insanity (Fürstner);

Acute hallucinatory Wahnsinn (Krafft-Ebing);

Amentia (Meynert);

Hallucinose (Wernicke).

He also describes under this head "delirium acutum" as a primary incoherent form, and alcoholic delirium tremens as a peracute variety of acute hallucinatory paranoia.

Although he says that in the typical form "Affectsstörungen" are secondary to the intellectual disorder, he allows that there are undoubted cases in which, from the beginning of the disease, either occasional or lasting exultation or depression exists, for which no explanation can be given by the hallucinations, and *which must therefore be looked upon as primary*.

This seems to give away the whole position as to the claim for essential primary disease of intellect.

His chronic forms include cases of systematized delusions of persecution and exaltation as we know them in this country, and the "délire chronique" of Magnan.

Again, he claims that primary disorder of emotion is not found in typical cases, but allows the possibility—"Noch seltener sind primäre Affectsstörungen: dauernd kommen sie nie,"—but with Krafft-Ebing he recognizes that the sufferers have in early life been shy, irritable, and of "zurückgezeugten Wesen."

In the case of paranoia simplex chronica he says "primary disturbances of affect and association are present as transitory concurrent symptoms," and that exceptionally he has seen it develop in women after an emotional shock (Affectstoss).

When considering the forms of paranoia which he groups under complex psychoses he again destroys the theory of primary intellectual disorder. For instance, in describing "secundäre hallucinatorische Paranoia" he says that the melancholic or maniacal stage presents all the essential points of a typical melancholia or mania, and the second or paranoiac stage runs as a typical hallucinatory paranoia. In other words, it is secondary to what he has considered to be primarily affective disorder. The same remark applies to (c) and (d).

His periodic and circular paranoia include either recurring cases of "acute hallucinatory paranoia" or cycles of delirium and stupor, and by most writers would not be included under paranoia.

The third German text-book which I propose to notice is that of Professor Kraepelin of Heidelberg.

Professor Kraepelin's writings have perhaps had more influence on the world of psychiatry than those of any other living writer. In all recent

American text-books he is referred to or copied from at length, but with the exception of Macpherson (*Mental Affections*)¹ the writers of English text-books do not refer to his views. Professor Kraepelin has always held an open mind on the question of classification, and has modified it in the various editions of his *Psychiatrie*.

He has never adopted the term "paranoia" with any satisfaction, but still retains the old word "Verrücktheit" as synonymous with chronic delusional insanity and puts "paranoia" in brackets as a secondary name.

He entirely separates acute forms from the chronic and puts acute Verwirrtheit or Meynert's amentia under Erschöpfungsirresein (insanity of exhaustion), grouping it with "collapse delirium" and chronic nervous exhaustion.

He makes no separate headings of "hallucinatory Wahnsinn" or "secondary Verrücktheit" as Krafft-Ebing does.

In the sixth edition of his work (published in 1899) he says: "Under the name 'Paranoia' a large number of German alienists include together all those functional mental diseases in which the disorder expresses itself principally or exclusively in the domain of the intellectual faculties," the essential sign being delusions and hallucinations.

He refers to the early views of Griesinger and others as to the affective origin of this mental disorder, and to the later development of the view, that the disease is to be looked upon as a primary disorder of the understanding in contrast to disorder of feeling. He then summarizes Cramer's and Ziehen's work and says: "This led of necessity to the inclusion in Verrücktheit of a number of disease pictures, which taken clinically had not the least true relationship with the original Verrücktheit, as, for example, amentia, alcoholic delusional insanity, and numerous conditions which undoubtedly belonged to dementia præcox or 'manisch-depressive' insanity."

He holds this development to be quite erroneous and says: "The opposition, looked upon as fundamental, between disorders of the understanding and those of feeling is only a psychological one and not at all clinical. In real disease pictures (Krankheitsbilder) we see both bound up together in a quite incalculable way."

He says that as a fact attempts to regulate the "paranoia group" and separate it from other forms of insanity end always with the statement that mixed forms and transitional cases occur between it and the "affective" mental disorders.

"Therefore the only groundwork of the present paranoia idea, the artificial contrast between diseases of intellect and diseases of emotion, collapses."

Referring to the question of diagnosis and prognosis, he says "It needs no proof that the now 'universal disease' ('Universalkrankheit') paranoia, which according to many physicians includes 70 or 80 per cent of the whole, does not bring us a step further in this direction."

¹ The sixth edition of Clouston's *Mental Diseases* had not been published when this was written.

Further he holds the idea of an "acute paranoia" to be chaotic, because thereby the essential incurability and persistent growth of developing delusions are entirely overlooked. He therefore limits the term "paranoia" to the undoubted group of cases in which there is a clearly recognized, slowly developing, and unshakeable system of delusions.

He describes the cases with gradual onset of persecution developing hand in hand with exaltation, but he differs from others in saying that hallucinations are rare.

With reference to Sanders' "originäre Paranoia," he says he has rarely met it before the third decade of life.

In his sixth edition he ceased to subdivide Verrücktheit or paranoia into subordinate groups, only mentioning the "erotic" and "querulant" varieties. With regard to feeling he says: "Die Stimmung des Kranken steht mit seinen Wahnvorstellungen in innigstem Zusammenhange"; that is, the mood is in the most intimate connection with the delusions, but not therefore dependent on them.

In the sixth edition Kraepelin first described the paranoid form of dementia præcox, calling it "dementia paranoides" and including under it the "phantastische Verrücktheit" which he formerly included under paranoia; in other words, he removed from the chronic delusional group a large number of cases in which organized and systematized delusions had developed, on the ground that the passage of the patient into early weak-mindedness rendered it necessary.

He says: "The numerous delusions in the course of dementia præcox may often give rise to the diagnosis of paranoia. The greater number of the cases designated under this name by other alienists belong in my opinion to the group of cases described here and especially to the paranoid form."

In other words, he endeavors to solve what has always been a matter of conflict, the question as to whether delusional insanity or paranoia ever ends in dementia, by removing an important group of cases into the domain of dementia.

In a paper in the AMERICAN JOURNAL OF INSANITY, January 7, 1904, on the present status of paranoia, Dr. W. McDonald, of the Butler Hospital, Providence, R. I., refers to this as follows: "We have often heard a patient referred to as an old 'paranoia' in terminal or secondary dementia, while his neighbor, perhaps an older man, and one in whom the disease has been longer evident, was spoken of as having undergone very little mental deterioration. Recently our confidence in paranoia has received a jar; the Germans have been altering classifications . . . gradually the atmosphere clears, and it is found that paranoia includes a number of patients who rightly belong to the dementia præcox group."

Referring to Kraepelin's nomenclature as used in America, he says, "We not only accept his ideas, we bolt them whole."

He finds at last that all the paranoiacs have been placed in the dementia præcox class, and raises the question, "Is there no more paranoia?" He also writes of the absurdity of speaking of a patient as having little or no

mental weakness, when he is at the time misinterpreting every one of the smallest incidents of life.

Lastly, I have taken as exhibiting the French position with regard to paranoia the articles on that subject in Ballet's recently published *Traité de Pathologie Mentale*. The word "paranoia" has been disliked in France as in England, and Dr. Arnaud of Vanves, who writes the chapters on this subject in Ballet's *Traité*, heads the chapter "Délires systématisées ou partiels," with the terms "paranoia" and "Verrücktheit" in brackets as the German synonyms.

He gives a most comprehensive table showing the German classification, and the French equivalents, to which I call your attention.

BALLET—ARNAUD.

CLASSIFICATIONS DES DÉLIRES SYSTÉMATISÉS.

Classification Allemande.

Équivalents Français.

Wahnsinn (Snell, Schüle).

Verrücktheit (Sander, Westphal, Kraepelin).

Paranoia (Krafft-Ebing, Mendel, Morselli, Tamburini, etc.).

Paranoia, primitive. Wahnsinn. Verrücktheit.	Chronique.	Originelle (Originäre Verrücktheit de Sander, Westphal, Schüle).		{ Mégalomanie (Dagonet et Ball). Délire systématisé des dégénérés débiles (Magnan). }	
		Tardive ou	Dépressive, avec délire de persécution.	Forme typique.	{ Délire de persécution à évolution systématique (type Lasègue-Falret). Délire chronique (Magnan). }
				Délire querulant.	{ Persécutés-persécuteurs raisonnants (type Falret). }
	Aiguë.	acquise.	Expansive avec délire de grandeur.	{ Des inventeurs. Belligères. Érotique. }	{ Mégalomanie. Délire systématisé religieux. Folie érotique (Ball) Délires systématisés des dégénérés (Magnan). }
				{ Simple. Hallucinatoire (avec confusion mentale). }	{ Délires systématisés aigus. Certains cas de confusion mentale hallucinatoire. Délire d'emblée des dégénérés (Magnan). }
Paranoia secondaire			{ à mélancolie. à manie. à paranoia aiguë. }	{ Délires systématisés post-mélancoliques. Délires systématisés post-maniaques. Manie chronique, démence. }	
Paranoia abortive ou rudimentaire (Westphal, Arndt, Morselli, Tamburini).			{ Idées fixes états obsédants. }	{ Folie du doute avec délire du toucher, agoraphobie, obsessions et impulsions diverses. Syndrômes épisodiques de la dégénérescence (Magnan). }	

In his own classification, which is given here, he recognizes acute and chronic forms.

ARNAUD.

DÉLIRES PARTIELS OU SYSTÉMATISÉS.

Paranoïa des Allemands.

I. Délires systématiés aigus—Paranoïa aigus.

II. Délires systématisés chroniques—Paranoïa chronique.	1. Dépressifs.	Persécutés à évolution systématique.	Forme typique de Lasgue-Falret, et délire chronique de Magnan. Forme psycho-motrice (Séglas).
	2. Expansifs.	Persécutés auto-accusateurs et persécutés mélancoliques. Délire d'auto-accusation systématisé primitif. Délire hypochondriaque systématisé.	Ambitieux (mégalo manie). Religieux. Érotique.

After a general history of the subject embodying the differences of opinion I have referred to, he defines "délires systématiés" as functional psychopathic states characterized by delusions (*idées délirantes*) permanent, fixed, methodically allied together, developing in a regular direction, and following a logical evolution. These states, "independent of any hitherto appreciable organic lesion, *appear to be equally independent of all emotional origin.*"

He very properly says, although the delusions are only manifested in certain groups of ideas, yet the mind as a whole is diseased, and is incapable of exactly appreciating and rectifying the false elements invading it.

He agrees that not only may the systematized or partial delusions be "délires primitifs," but may also appear consecutively to a mental disorder of another nature, ordinarily an access of mania or melancholia, and are then called secondary, post-maniacal, or post-melancholic (*paranoïa secondaire*).

He refers to the discords and complexity of the discussions in France, Germany, and Italy on the subject, and says: "Les auteurs employant des termes différents pour designer les mêmes choses, ou appliquant les mêmes terms à des choses différentes."

With regard to the question of the acute cases, he gives all the synonyms we have referred to, pointing out that the systematization is ordinarily feeble, and has never the cohesion and logical development of the chronic cases, but still holds that emotional reactions are dependent on the delirious concepts and hallucinations, and develop secondarily, contrary to what happens in mania and melancholia.

He, however, speaks of the possibility of the delirium (*délire*) being at base melancholic and depressive.

He agrees with those who hold that recoveries are often followed by relapse and passage into the chronic forms, contrary to the views of Krafft-Ebing and Magnan.

With regard to the chronic cases Arnaud adopts the French groupings, and it may be said that although he has started by a general statement as to the independence of the condition on any emotional origin, yet he frequently acknowledges that in the early stages the emotional or affective disorder is prominent, as, for example, in the group of "persécutés auto-accusateurs," which he says forms a link with melancholia, and in "délire hypochondriaque systématisé," which he says is marked early by "exaggerated preoccupation with health without constant expression of definite delusions."

Again, in the expansive groups he says there is a common groundwork in a very marked tendency to pride.

In the religious group "ce délire atteint des sujets qui depuis l'enfance présentaient un goût marquée pour les pratiques de la religion . . . et souvent une véritable exaltation mystique."

Again, childhood is characterized by "aptitude for religious emotions," often with genital excitability which determines a painful moral struggle with remorse. It surely cannot be thought, then, there is no primary emotional disorder in this nor in the final group of "délire systématisé érotique."

The confusional group is described in a different chapter by Dr. Anglade of Bordeaux, apart altogether from paranoia, to which he holds it does not belong.

In addition to Kraepelin other German authorities have of late years cast serious doubts on the conception of paranoia as a primary intellectual disorder and have refused to regard it as including forms of mental disorder of delirious or confusional type.

For instance, in the discussion on Cramer's paper in Berlin, Jastrowitz, referring to acute cases, asks what has the exhaustion—collapse—intoxication delirium to do with the different varieties of paranoia—"Wo ist da die Analogie mit der Paranoia chronica?"

Professor Jolly, of Berlin, whose recent death we have to lament, referring to the question of primary or secondary emotion, says: "The thesis that in one case anomalies of mood are primary and lead to confusion, while in another the delusions and hallucinations appearing in confused states lead to an altered state of feeling, is a purely theoretical one." And further: "It is most unlikely that the groundwork of any mental disorder lies in such narrow circles as pure 'affect' or pure disorder of idea."

Moeli, moreover, says that although "Affecte" may play only a secondary rôle in chronic paranoia it is not shown that in early cases the emotional side is unaffected, and in the period of distrust there is not necessarily a formulated expression of persecution.

Professor Grimaldi, of Naples, in the *Annali di Neurologia*, 1903, in a

critical review on "L'origine affectiva dei delirii paranoici" in German literature, refers to Cramer's paper and the discussion on it and says that the primary intellectual origin of paranoia received then a consecration which appeared to have silenced forever any opposite view, but that from that moment there began in Germany a descending line which by successive steps will lead to its final abandonment.

He quotes Specht as saying that the view has now fallen from the height of a dogma to the grade of a problem, and also refers to Moeli's views which I have already quoted.

To show the change made in a short time he gives a résumé of the views of Professor Specht, of Erlangen, who in his paper "Ueber den pathologischen Affect in der chronischen Paranoia" calls the primitive ideas or primary delusions of Krafft-Ebing "inventions of a very unhappy kind." Specht refers to the discrepancy between the teaching of practice and the preconceived theoretical point of view. This is manifest when these "primary" delirious ideas are spoken of as accentuation of temperament or character, so that the vain arrive at grandeur and the diffident at persecution.

Specht finally considers "diffidence" as the primitive part of consciousness antecedent to every other morbid phenomenon, but Grimaldi goes further and thinks that earlier than diffidence there exists in paranoia a state still less evolved, which is the instinctive feeling of fear. "Who has fear has pain in two ways, in having the fear and in having the presentment of future pain." This induces an orientation of attention in the direction of the external surroundings and an outlook for noxious forces and actions. He sums up as follows: "It is vain to deny it; the persecuted paranoiac is above all fearful, fearful if looked at and observed, fearful if he withdraws himself, solitary and vigilant, fearful if he advances, circumspect and prudent or resolute and violent." With regard to exalted paranoiacs he says: "The pride of the paranoiac is not that of a triumphant and happy man, but unsatisfied pride, impotent vanity, threatening pride,—dispossessed prince, unrecognized king, despised and unworshipped God—he is entirely devoted to sorrow."

Dr. Linke, in a paper, "Noch einmal der Affect der Paranoia," in the *Allgemeine Zeitschrift für Psychologie*, p. 257, 1902, refers to the fact that the question as to whether "Affect" gives its characteristic coloring to the delusional state of paranoia is occupying an ever-increasing space in psychiatric literature, and says: "The statement that the onset of delusion in paranoia is due to a primary disease of the intellect would find few adherents to-day," and that the greater number of those who have taken up the opposite position hold that a morbid change of the Ego brought about by "primary Affect" is the basis of the onset of delusion, a divergence of opinion only existing as to the kind of primary "Affect."

I come now to recent English writers. Conolly Norman, in the article on systematized delusional insanity (for which he uses the synonym "paranoia") in Clifford Allbutt's *System of Medicine*, adopts what I think is the continental error with regard to the genesis of this form of mental

disorder. He defines it as "that form of mental unsoundness which is specially characterized by delusion—that is, by beliefs not common to the race, which arise from the uncorrected action of the imagination, are fixed and systematized, and *are not immediately connected with a predominant emotional state.*" He contrasts this condition with acute forms of mental disease in which delusions are associated with the predominant emotional state, "*wherein they appear to take their rise, and which at the same time they reinforce.*" After describing the condition of patients before the onset of definite delusion as being "self-centred, self-opinionated, and self-absorbed," and as "suspicious, touchy, and ego-centric," he says later on: "The delusions in the disease we are considering are rightly called primordial, for they do not appear to belong immediately to any emotional state and they strike in upon the mind of the patient as a new train of events."

He does not refer to acute "Wahnsinn" or "Verrücktheit" or "Verwirrtheit" under Paranoia.

In the article on delusional insanity to which he gives the synonyms "monomania" and "paranoia," in the recent edition of Quain's *Dictionary of Medicine*, Robert Jones adopts the following view: "Although there is less emotional disturbance in this form than in any other variety of insanity, it is incorrect to state that there is none; for every action and every thought has a distinct fundamental feeling-tone of pleasure or pain, and the egoistic feelings which so predominate in these cases obtain such an ascendancy over the intellectual life that the personality becomes changed."

Mercier, in *Psychology, Normal and Morbid*, expresses himself very strongly as to the importance of feeling in the genesis of delusion, and I will quote shortly from his work. On page 272 he says: "In point of time alteration and exaggeration of emotion produce delusion." On page 274: "Such a thing as a neutral delusion, a delusion which is neither pleasurable nor painful, scarcely exists, and does not exist at all as a primary state." Referring to "deluded states," he says: "There is a deluded state which is affection (=affect) pure and simple, which is pain only or pleasure only, and which includes no discernible trace of intellectual delusion." And, further: "The deluded state contains at the outset a large proportion of pleasure and pain, and may even in its early stage consist entirely of pleasure or pain; to this affection delusion is soon added, and thereafter the proportion of affection to delusion varies much."

On page 479 he says: "I cannot recall a single instance in a long experience in which delusion has arisen, except as part of an emotion."

Sully (*The Human Mind*) is very definite on the close interaction between feeling and intellect, and referring to the views of Herbartian psychologists, and especially Dr. J. Ward, that a presentation excites feeling and leads to desire, and so to conation, he says: "Even in the case of the higher feelings it is not uncommon to find feeling preceding representation. This applies, for example, to sudden and disturbing sense-impressions, which affect us disagreeably before they are objects of appre-

hension, and to worrying thoughts, *e. g.*, of some omitted duty, which give us trouble before they emerge into clear consciousness. Moreover, attention to presentations, as we shall see, *appears in all cases to follow feeling*, which here assumes the form of interest, and it has pointed out that there is no process of intellection without attention."

He further makes the very important statement, which seems to me to be very apt in relation to the condition we are considering: "It is in the rooted beliefs of the romantic dreamer, the enthusiast, and so forth, that we may best study the action of feeling in consolidating particular ideal attachments and giving them the semblance of firm, well-weighted judgments."

I think I have said enough to show that there is no common agreement as to the connotation of "paranoia" even in the country of its origin, that by some authors groups of cases are included under this term which others hold to be entirely outside it, and that the doctrine of primary intellectual disorder, apart from the element of feeling or "affect," has of late received rude shocks, and that it is tottering to its fall.

I have always taught students that in examining any case of mental disorder it is entirely erroneous to omit to examine all the functions of mind, feeling, knowing, and willing, that the mind is not divided into watertight compartments, and that in taking the history of any case it is most important not to accept without close inquiry the account given by relatives of the mode of onset and order of appearance of symptoms.

In my opinion the separation of primary affective from primary intellectual disorders is purely artificial, and just as in mania and melancholia the affective state is not the sole factor, so in paranoia the affective side cannot be ignored.

I may sum up my own views as follows:

1. The term "paranoia" is useful if it be limited to cases of chronic delusional insanity in which there are organized and systematized delusions, whether of persecution or exaltation, and whether these run separately, concurrently, or by transformation from persecution to exaltation, and whether the disorder originates in childhood and youth (*originäre Paranoia*) or later in life (*tardive Paranoia*), and whether associated with heredity or not.

2. In all these cases the importance of the affective element of mind must not be ignored, and it is erroneous to use the term "paranoia" as implying primary intellectual disorder to the exclusion of, or prior to, disorder of "Affect."

3. Allowing that there are acute cases in which delusions appear to be organized and systematized, and yet in which recovery appears to take place, many of these are merely the initial phase of chronic delusional insanity with a remission of symptoms.

4. If the incubus of the idea of primary intellectual disorder be got rid of, there is no difficulty in recognizing that some cases of paranoia may begin with an acute functional mental disorder of the nature of melan-

cholia or mania (as is indeed recognized even by those who take the primary intellectual view), or even may follow a delirious or confusional state.

5. With this exception, acute confusional insanity (acute Verwirrtheit) and acute delirious states (acute delirium, collapse-delirium, Erschöpfungsdelirium) should be regarded ætiologically and clinically, and from the point of view of diagnosis and prognosis, as entirely apart from paranoia or chronic delusional insanity.

6. Mercier's term "fixed delusion" should be used for states secondary to acute forms of insanity, where the persisting delusions are not organized or progressively systematized.

7. With regard to terminal dementia in paranoia, it is trying to prove too much to say, as some authors do, that dementia does not ever supervene in this condition; and I think that Kraepelin's action in removing a large group of cases in which terminal weak-mindedness occurs from the domain of paranoia to that of dementia præcox is open to question. There seems to me a possibility that dementia præcox, with its hebephrenic, catatonic, and paranoid forms, may become the new universal disease ("Universal-krankheit"), into which large numbers of cases may be thrown, and which will give rise at no distant date to as much discussion as has attended paranoia.

Ricerche sul ricambio materiale nei dementi precoci. Prima nota: La eliminazione del bleu di metilene e del Iodoro di potassio per via renale. Del DOTTORI ANTONIO D'ORMEA E FERDINANDO MAGGIOTTO. Giornale di Psichiatria Clinica e Tecnica Manicomiale, Anno XXXII, Fasc. I-II, 1904.

This is a most careful piece of work and the authors have published their results in such a form that any question as to their results may easily be answered by referring to the original paper. For the research on the elimination of methylene blue 15 men and 15 women patients in the Manicomio Provinciale di Ferrara were selected, five of each being from the three forms of dementia præcox, hebephrenic, catatonic, and paranoïd. These were in good physical health. On the day preceding the experiment the urine for twenty-four hours was carefully examined in order to establish the integrity of the renal function. An injection of .05 gm. methylene blue C. P. (Merck) dissolved in 1 cc. distilled water was made into the gluteus muscle, the patient's bladder having previously been completely emptied. Following the injection the urine was collected and examined every half-hour for the first eight hours, and then every four hours until twelve hours after the complete disappearance of any traces of methylene blue. As soon as possible after the urine was voided it was treated with chloroform and agitated, the coloration of the chloroform showing the faintest trace of methylene blue. The chromogen reaction was shown by boiling after acidifying with acetic acid. The intensity of the coloration of the urine was graduated as, 1. yellow green, 2. bright green, 3. green,

4. blue green or deep green, these corresponding to the following chromogen reactions: 1. faint reaction, 2. moderate reaction, 3. evident reaction, 4. intense reaction. For the first day of the experiment the patient was kept in bed, but after this was allowed to resume his accustomed mode of living. The diet of all patients was uniform. If urination was not spontaneous the specimen was obtained by catheterization. A short abstract of the history of each patient is given, and full particulars of each experiment. The results are tabulated in each case and other tables give the results found in each group of cases.

For the research on the elimination of potassium iodide only six cases, 3 men and 3 women, one of each sex belonging to the three forms of dementia præcox, were taken. The patient was given .2 gm. of potassium iodide C. P. by mouth, followed by 100 cc. of water, the bladder having been previously emptied. The urine was examined every ten minutes until the maximum reaction was shown and following every two hours during the day and every four hours during the night until twelve hours after the disappearance of any trace of iodine. At the same time the saliva was examined every two minutes with a paste of starch and chloroform with nitroso-nitric acid, and the same scale of reactions adopted as for the methylene blue.

The results of this research may be summed up as follows: I. In the normal individual the elimination of methylene blue begins in the first half-hour after the injection, in four hours has attained its maximum intensity, the total period averaging 80-90 hours. The period of elimination is longer in women than in men. The curve of elimination is of the continuous polycyclic type. II. In precocious dementals the elimination appears after several hours, reaches its maximum in twelve hours, and the total period is prolonged in men to about 100 hours and in women to about 130 hours. The curve of elimination is of the polycyclic discontinuous type. III. In relation to the three varieties of dementia præcox the following facts are noted: (a) In hebephrenics the elimination has a rate more nearly normal, and more rapid than that of the two other forms. An intense reaction is present in eight hours and the reaction disappears in from 100 to 110 hours. The length of the period of elimination is but slightly different in the two sexes. (b) In catatonics the elimination is relatively much slower in beginning than in duration, the latter ranging from 110 hours in men to about 130 hours in women. The average beginning is in twelve hours. The maximum intensity appears in from 12 to 24 hours. (c) In the paranoic form the beginning of the elimination is more rapid than in the other forms, whilst the total period is prolonged beyond 120 hours with notable difference between the two sexes, 100 hours in men and 150 hours in women. The maximum intensity is reached in about 12 hours. IV. In normal individuals iodine can be detected in the urine ten or fifteen minutes after the administration of potassium iodide, and in the saliva in from six to ten minutes, reaching an evident reaction in both in about 25 minutes, and quickly reaching a maximum inten-

sity which may be prolonged for ten hours, then slowly disappearing after about 30 hours. The curve of elimination is continuous. V. In precocious dementes the beginning of the elimination is notably slow in both urine and saliva, more marked in the catatonic and paranoïd than in the hebephrenic. The total duration is prolonged to about 50 hours. The curve of the elimination varies little from the normal and is a continuous polycycle.

W. R. D.

Contributo anatomico-patologico e clinico allo studio dei rapporti tra sifilide e paralisi progressiva. Del DOTTOR RODOLFO STANZIALE. *Annali di Neurologia*, Anno XXII, p. 353, 1904.

The author's conclusions are as follows: 1. In 100 cases of progressive paralysis syphilis and its sequences was present in 87, being present with certainty in 70 and being doubtful in 17. 2. In the 70 cases with positive syphilitic infection, investigation showed it to be the sole cause in 32, and associated with some other cause in 38. 3. Syphilis may be the sole cause of progressive paralysis but frequently other hereditary or acquired etiological factors are found upon investigation. 4. In every case of progressive paralysis in which the individual has suffered from syphilis the cerebral arterial system shows changes which are caused by the luetic process. 5. Strong mercurial treatment does not materially modify the course of the disease.

W. R. D.

Contribution a l'étude de l'état du fond de l'oeil dans la paralysie generale. Par MM. BRICHE, RAVIART ET CAUDRON. *L'Echo Medical du Nord*, An. 8, p. 466, 25 Sept., 1904.

Among 900 insane women in the asylum for the insane at St. Vincent 23 were paretics. Ophthalmic examination of these showed lesions of the fundus in 18, as follows: 3 showed softening of the papilla, 11 showed paleness of the papilla, 2 showed a white papilla with a contour more or less sharp, and 2 showed white atrophy. In most of the cases the two eyes were not equally affected, one case showing one normal while the other showed a pale papilla. Patients most advanced in the disease showed the greatest lesions of the fundus, the two patients who showed white atrophy being bedridden and untidy. Of the five patients who showed no eye lesions, one was in a condition of remission, one was of a slow course, and three were in the third period.

W. R. D.

Fréquence et étiologie de la démence précoce. Par J. CROCQ. *Bulletin de la Société de Médecine Mentale de Belgique*, Septembre, 1904.

In 300 admissions the author has found 47 cases of dementia præcox, 19 being men and 28 women. He believes that this marked difference between the two sexes may be explained by the fact that his patients belong to an intellectual well-to-do-class and that in this order of society dementia præcox is more common in the women, while in the poorer classes dementia

præcox is more common in the men. The age of onset of the disease is shown diagrammatically and is found to be highest between 30 and 35 years for both sexes, at the same period for women, and about five years earlier for the men. The age of onset ranged from 14 to 53 years. Crocq believes that the term præcox should refer to the precocity of the dementia in relation to the beginning of the mental disorder and should not be used in relation to the age of the subject. Among the causes given are prolonged sorrow, intellectual overwork, traumatism, syphilis, and alcohol. In opposition to Deny the author believes that the two last may be exciting causes in a predisposed individual. He also believes that trauma may be a cause, four of his cases, three men and one woman, having become insane following trauma. He gives brief abstracts of these four cases.

W. R. D.

Contribution a l'etude de la nevrose d'angoisse. By DR. CAPGRAS. *Annales Medico-Psychologiques*, An. LXI, p. 397, November-December, 1903.

In 1895 Freud described (nevrose d'angoisse) fear neurosis as a distinct syndrome characterized by the following symptoms: 1. general irritability; 2. apprehension with crises of fear which were paroxysmal and rudimentary; 3. vertigo; 4. various phobias. This fear neurosis always had a sexual origin. Hartenbourg in a later study (see review in this JOURNAL, Vol. LIX, p. 175) admits the entity of nevrose d'angoisse, but thinks that an emotional shock is as often a cause as any sexual disorder. Pitres and Regis agree with the last but do not admit the entity of the disease. They believe that it is usually associated with neurasthenia and melancholia but may occur in all other neuroses and in a number of psychoses. Capgras reports three cases in all of whom there was an irregular sexual life, but he does not think that too much importance should be ascribed to this as an etiological factor. He believes with Lalanne that fear neurosis is an intermediate state between the neuroses and the psychoses, whose base is fear.

W. R. D.

Contribution a l'etude clinique des monologues chez les aliens. By DARCANNE, interne. *Archives de Neurologie*, Vol. XVI, p. 479, December, 1903.

The author believes that from a study of monologues of the insane that there may be derived valuable information regarding the prognosis and diagnosis of mental diseases. He discusses the extrinsic character, the intrinsic character, the psychology, and the value from a diagnostic and prognostic standpoint. Numerous examples are given and the paper is an interesting one.

W. R. D.

Mechanical Restraint and Seclusion of Insane Persons. By CHARLES W. PAGE, M. D. Boston Medical and Surgical Journal, Vol. CLI, p. 590, December 1, 1904.

This paper was read before the State Board of Insanity Conference held at Boston, May 17, 1904. The author briefly reviews the work of Pinel, Tuke and Conolly and describes his own efforts to do away with mechanical restraint in the Danvers Hospital. He believes that halfway measures are not practicable and that mechanical restraint must be absolutely dispensed with to be successful. The gain is considerable to the attendants as well as to the patients, but to be successful one must be in earnest. The article is well worth the attention of those responsible for the care of the insane.

W. R. D.

Report of Two Cases of Presenile Delusional Insanity. By JOHN D. O'BRIEN, M. D. Cleveland Medical Journal, Vol. III, p. 451, October, 1904.

The author begins with a résumé of the psychosis described by Kraepelin under the name of presenile beeinträchtigungswahn and gives histories of two cases which have been under his observation. To those who are familiar with this group Dr. O'Brien's paper affords an excellent means of becoming acquainted with it.

W. R. D.

Book Reviews

Surgical Anatomy of the Head and Neck. By JOHN B. DEAYER, M.D.
(P. Blackiston's Son & Co., Philadelphia, 1904.)

In a large royal octavo volume of 770 pages containing 177 full page plates, "nearly all drawn from original dissections" by the author, the publishers have gathered "those sections of Dr. Deaver's complete work on 'Surgical Anatomy' which treat specifically of the regions which are of greatest interest to those practitioners who confine their work to diseases of the eye, ear, nose, mouth, throat and nervous system, etc." The short prefatory note by the publishers thus explains the reason for incorporating in a separate cover certain sections from the more extensive and already well-known volumes by the same author on surgical anatomy which have heretofore appeared and have been sold by subscription only.

The general method in which the author has treated the various topics differs not greatly from that followed by others who have written upon regional anatomy in its relation to surgery. Treves' little volume, which has seen so many editions, being perhaps the least ostentatious and yet the best known of any which has appeared in English. Dr. Deaver's volumes combine some of the features of the dissector's manual; of topographical anatomy and of operative surgery. The present work opens with the dissection of the neck; its superficial landmarks are discussed with some remark on developmental processes in so far as they concern the formation of congenital cervical fistulæ, the steps of the superficial dissection then follow, jugular phlebotomy being discussed; the dissection carried deeper exposes the cervical fascia, etc., and then follows a section on abscess of the neck; the cervical plexus is exposed and torticollis is discussed and its operative treatment by neurectomy described; the triangles of the neck and their contents; the blood-vessels, aneurysm; nerves and the effects of their being injured; the muscles, their blood supply, innervation and action; the ligation of vessels and collateral circulation; the various operations of neurectomy, etc. Similarly the structure of the mouth, larynx, pharynx, nose and orbit are taken up, largely from an anatomical but also in a measure from a physiological and therapeutic (surgical) aspect.

This volume, like its predecessor, as a specimen of book making leaves nothing to be desired. Noteworthy above all other features are the reproductions of the beautiful anatomical drawings which vie with the best of the recent German anatomies in perfection of detail; they possess furthermore the most desirable feature of having the names of the individual structures printed at the margin of the plates, which are large enough to

permit this without marring in any way the beauty of the drawings or confusing the picture. Many of the plates present the structure considerably magnified. Some things relating to the illustrations by themselves are open to criticism. In a volume so large and heavy it seems almost unnecessary to reduplicate the plates; Plate I, for example, showing "Lines of Incision for Exposure of Arteries and Nerves," appears again as Plate XIII and Plate XXXIV. Plate II and Plate LXV are the same; also III and CLV. The size of the volume also would have been lessened almost one-quarter had the drawings been printed on each side of the page; as it is there are 177 blank pages of specially prepared paper for which the subscribers must pay. A statement therefore that the volume contains 770 pages means that there are only 410 pages of context, 177 plates, several of them reduplicated one or more times, and 177 blank pages. It is certainly quite unnecessary that there should be two large plates of the normal external ear (XCVIII and CLXIII) and were it not for this feature, which savors of padding, the price of the volume might have been brought within the possibilities of purchase of medical students.

The section on the nervous system is limited to the brain and its membranes, and is illustrated by a series of excellent plates; one of them, however, delineating the cortical topography is very poor and gives exceedingly antiquated views regarding the situation of sensory and motor areas.

The volume is very much better indexed than many of our anatomical works; thirty-four pages of reference, both to the context and to the plates, closing the work.

Epilepsy and its Treatment. By WILLIAM P. SPRATLING, M. D. (Philadelphia, New York, and London: W. B. Saunders & Co., 1904.)

The fact that Dr. Spratling for the past ten years has held the position of Superintendent of the Craig Colony for Epileptics and his excellent record in that position leads us to expect much in this, his first work of special magnitude upon epilepsy. The present time would also seem a favorable one for the publication of a manual on epilepsy as none has been published for several years, if we except the work of Gowers. While Dr. Spratling has done well, a perusal of his book is succeeded by a feeling that he has not quite come up to our expectations. Perhaps we expect too much and look for the solution of questions which have long been the subject of debate, but in view of the positiveness of some of Dr. Spratling's statements it would seem that we were justified in expecting much in the way of definite conclusions.

There are a number of his statements which one can criticise chiefly on the ground that further proof is necessary, as an example may be given the remarks upon heredity which begin the chapter on etiology, where we also find the writer's interesting but theoretical remarks on the physiology of the nerve-cell.

Dr. Spratling speaks of epilepsy usually as a disease, but occasionally

refers to it as a symptom-complex, believes that the impairment or loss of consciousness and the impairment or loss of motor co-ordination are the essential manifestations. He firmly believes in an hereditary predisposition, that the individual with epilepsy was born with some defect in his nervous tissues, which with stress in some form constitute the essential causes. The list of causes begins with infectious fever and includes emotional shock, trauma, gastro-intestinal disorders, lead poisoning, renal disease, heart disease, the abuse of tobacco, disorders of menstruation, pregnancy and maternity, masturbation, syphilis, eye strain, asphyxia by coal gas, together with others. In regard to tobacco as a cause the author somewhat naively remarks that it is worth noting, "that epilepsy appeared in all of the six cases which he had seen in which cigarette smoking was given as a cause, about the age of puberty and mostly in boys whose ancestry was not good, which two important facts, together with a tendency to self-abuse at this age, should cause us to be careful in ascribing the cause to cigarette smoking alone." It would seem proper to ignore it as a cause entirely when we have had heredity, puberty, and masturbation given as coexisting causes. Extreme fatigue is believed to be a cause of individual attacks only. The author is unable to recall a case in which eye-strain was determined to be the "whole cause," a statement which is properly conservative. A number of other causes are given, such as phimosis urethral stricture, beestings, hypertrophy of the schneiderian membrane, etc., which might more properly and more lucidly be discussed under the head of peripheral irritations.

The chapter on pathology has been written by L. Pierce Clark and Thomas P. Prout, who state in a foot-note that for details of some of their work reference should be made to their original articles. To the statements of changes described under microscopic pathology exception may be taken to the following: (1) That the cells of the second cortical layer are distinctly sensory in type. No proof of this statement is made in this chapter nor in Clark and Prout's other writings. That they are content to describe an artefact, the abstraction of the nucleolus in section cutting, as a "striking" histological change seems remarkable, and the claim that this artefact is found two or three hundred times more frequently in cortices from epileptic cases than in normal tissue makes it even more remarkable. For if such were the case it seems strange that so striking an artefact would not have been reported by earlier investigators. (2) The statement concerning the invasion of the cortex with leucocytes and ascribing phagocytic functions of the latter may well be received with doubt, as a fairly large number of neuropathologists at the present time are of the opinion that leucocytes do not have the power of wandering about in the brain cortex.

Criticism might be made of a number of other statements in Dr. Spratling's book, and especially concerning those in the chapter on the surgical treatment of epilepsy, but sufficient has been said to indicate the character of the defects, and the good in the book so far outweighs the bad that it seems an ungracious task to make further unfavorable comment. Typo-

graphically the book is attractive and the large number of illustrations, diagrams, and tables add materially to an easy comprehension of the text.

W. R. D.

On the Classification and Pathology of Beri-beri. By HAMILTON WRIGHT, M. D. Studies from Institute for Medical Research, Federated Malay States, Vol. II, No. 2. (London, 1903: John Bale Sons and Danielson, Ltd.)

This work consists of seventy-four pages of text with three plates. Dr. Wright has done his work well and has made a most suggestive contribution to an interesting subject. The classification which he adopts and sets out to prove is acute pernicious beri-beri, acute beri-beri, subacute beri-beri, and beri-beric residual paralysis. His work seems to justify this classification. The pathological findings in the central nervous system are reported at considerable length and essentially consist of varying degrees of the axonal reaction. It is a pity that for the histologic study of the nerve-cells the tissue was not fixed in alcohol rather than in formalin as the descriptions of the nerve-cell changes would then be less open to criticism. This objection cannot be made to the finding in the peripheral and sympathetic nervous systems where the fixation was by alcohol. While Dr. Wright was unable to prove that beri-beri is caused by a specific micro-organism he found a bacillus in the damaged gastro-duodenal mucosa of several cases whose presence he regards as significant. Dr. Wright is of the opinion that a gastro-duodenitis is the primary lesion of the disease, but believes that this cannot be definitely established until the specific organism, which he thinks exists, is isolated.

W. R. D.

Beauty Through Hygiene. Common-Sense Ways to Health for Girls. Illustrated by EMMA E. WALKER, M. D. (New York: A. S. Barnes & Co., 1904.)

Two chapters in this well-written and timely little book are of especial interest to those who are called upon to treat nervous and mental disorders. They are entitled "Relaxation and Sleep" and "Cheerfulness." The advice given is sensible and the language well chosen. Every young girl would profit by carefully reading the whole book.

The Forty-Fifth Annual Report of the General Board of Commissioners in Lunacy for Scotland. (Glasgow, 1903: His Majesty's Stationery Office.)

The report is for the year ending January 1, 1903. At this time there were in Scotland 16,658 insane persons, including the inmates of Training Schools for Imbecile Children, and of the Lunatic Department of the General Prison at Perth. There is so much of interest in this report that it is difficult to find anything of which special mention may be made, but probably the section dealing with lunatics in private dwellings will appeal

to those interested in the care of the insane who are confronted with the problem of caring for a larger number than the State hospitals will accommodate. From the reports of Dr. Sutherland and Dr. Macpherson, who are the visitors to this class, the success of this plan of caring for the insane seems to be well established. Another point of interest is the increase of lunacy in proportion to population which has been worked out from 1858. The number of lunatics under the jurisdiction of the board since that time has increased 186 per cent. During the same period the population has increased 50 per cent. The proportion of insane to the population now stands at 250 per 100,000, an increase of 46 in the last ten years. The report is well worth careful perusal.

W. R. D.

A Non-Surgical Treatise on Diseases of the Prostate Gland and Adnexa.
By GEORGE WHITFIELD OVERALL. (Chicago, 1903: Marsh and Grant Company.)

This book is a plea for the use of medicine and electricity in the treatment of diseases of the prostate gland. The author is earnest and sincere in his purpose but has not presented his case in a very convincing manner. He states that diseases of the prostate are frequently responsible for neurasthenia, melancholia, insomnia, and other neuroses, and gives abstracts of a number of cases, apparently in proof of this, but beyond the mere statement that the cases recovered after treatment he gives no proof.

The book contains so much that is good that it seems a pity that it is not better. From a perusal of it a person interested in the care of the nervous and insane is by no means convinced that he can cure any of his cases by treatment of the prostate nor indeed is he convinced that an examination of this organ is so necessary as the author would have us believe.

W. R. D.

Die Balkenstrahlung des menschlichen Gehirns nach frontalen Schnitten der rechten Hemisphäre einer sieben Jahre alten Schussverletzung.
Von DR. A. RICHTER. (Berlin, 1903: H. Kornfeld.)

The history of the case which has been studied in this monograph is first narrated quite briefly but so as to give all essentials for a proper understanding of what follows. The patient attempted suicide in 1889 by shooting himself in the right side of the head. Following this he had paralysis of the left arm and leg, and of the bladder, which were in turn followed by other paralyses. Eight months after the injury the patient was trephined but the bullet was not found and still other symptoms followed. Three and a half years after the injury after having been in two hospitals the patient was taken to the State Insane Asylum at Dalldorf where he died seven years, five months and twenty days after having received the bullet wound. At autopsy it was found that the bullet had entered the right hemisphere somewhat above and behind the ascending

ramus of the Sylvian fossa, emerging a little above the callosa-marginal sulcus, entering the left hemisphere at a point about .5 cm. higher and being found 2 cm. from the median fissure between the first and second quarters of the left post-central convolution. After the necessary preparation a study of microscopic sections of the tissues about the track of the bullet was made, and the findings are reported at considerable length. A number of illustrations add to the clearness of this part. In conclusion Richter reviews the work of other writers in relation to his own observations. The work is well done and is very interesting to those working in brain anatomy or pathology.

W. R. D.

Pamphlets Received

Out-of-Door Treatment for Tuberculosis at the Columbus State Hospital. George Stockton, M.D. Reprinted from the *Columbus Medical Journal*, April, 1904.

Poisoning by Wood Alcohol. Cases of Death and Blindness from Columbian Spirits and Other Methylated Preparations. Frank Buller, M.D., and Casey A. Wood, M.D. Reprinted from the *Journal of the American Medical Association*, October 1, 8, 15, 22, and 29, 1904.

Immunity from Consumption. Cause and Treatment of Consumption. Cyrus L. Topliff, M.D. Reprinted from *Scientific American*.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the fiscal year 1904.

Dipsomania and its Treatment. William Lee Howard, M.D. Reprinted from the *Medical News*, August 6, 1904.

A Case of Supposed Primary Tuberculosis of the Pharyngeal Tonsil. Donald M. Barstow, M.D. Reprinted from the *Medical Record*, October 8, 1904.

Fourth Annual Report of the New York State Hospital for the Care of Crippled and Deformed Children for the year ending September 30, 1904.

The One Hundred and Thirty-first Annual Report of the Eastern State Hospital of Virginia at Williamsburg for the year ending September 30, 1904.

First Biennial Report of the Superintendent of the Cherokee State Hospital at Cherokee, Iowa, for the period ending June 30, 1903.

Physiologic Extirpation of the Ganglion of Gasser. Further Report on Division of the Sensory Root for Tic Douloureux, Based on the Observations of Four Cases. Charles H. Frazier, M.D., William G. Spiller, M.D. From the William Pepper Laboratory of Clinical Medicine (Phoebe A. Hearst Foundation).

A Discussion of the Surgery of Tumors of the Brain, with a Résumé of the Operative Records of Four Craniotomies. Charles H. Frazier, M.D. *The American Journal of the Medical Sciences*, February, 1904.

Clinical Lecture on the Symptomatology and Treatment of Trifacial Neuralgia. Charles H. Frazier, M.D. *American Journal of Medical Sciences*, December, 1903.

A Further Report upon the Treatment of Tic Douloureux by Division of the Sensory Root of the Gasserian Ganglion. Charles H. Frazier, M.D., and William G. Spiller, M.D. *The Philadelphia Medical Journal*, 1902.

Report of a Case of Decapsulation of the Kidney (Edebohl's Operation) for Chronic Parenchymatous Nephritis. James Tyson, M.D., and Charles

H. Frazier, M. D. From the Transactions of the Association of American Physicians, 1903.

Case of Strangulated Meckel's Diverticulum Complicating Typhoid Fever. Joseph Sailer, M. D., and Charles H. Frazier, M. D. From the University of Pennsylvania Medical Bulletin, November, 1903.

The Perpetual Visiting and Pocket Reference Book. The Physician's Visiting List (Lindsay & Blackiston's).

Eighth Annual Report of the Manhattan State Hospital (East-Ward's Island), at New York, to the State Commission in Lunacy, September 30, 1903.

A Consideration of Some of the Methods to be Pursued in the Diagnosis of the Diseases of the Rectum and Anus from the Standpoint of their Practical Importance to the General Practitioner. Lewis H. Adler, Jr., M. D. From Virginia Medical Semi-Monthly.

Systems for Keeping Milk and Butter Records. Bulletin No. 94 of the Maryland Agricultural Experiment Station, July, 1904.

The Seventeenth Annual Report. Volume 17 of the Maryland Agricultural Experiment Station, 1903-1904.

The Character of Milk During the Period of Heat. Bulletin 95 of the Maryland Agricultural Experiment Station, August, 1904.

A Study of the Anatomy, Pathology and Etiology of Scoliosis, also presenting the Scoliotone, an Apparatus for Elongating and Lessening the Rotation of the Spine in Lateral Curvature. Compton Riley, M. D. Reprinted from the Journal of American Medical Association, April 2, 1904.

Casa De Orates de Santiago. Memoria De La Seccion De Hombres Correspondiente Al Ano De 1903. Joaquin Castro Soffia, M. D. Memoria De La Seccion De Mujeres. Octavio Echegoyen, M. D.

A Glance at the History of Cerebral Localisation with some Considerations Regarding the Subdivisions of the Areas of Representation of Cutaneous and Muscular Sensibility and of Concrete Concepts. Charles K. Mills, M. D. Reprinted from the Proceedings of the Philadelphia County Medical Society, September 30, 1904.

Aphasia and the Cerebral Zone of Speech. Charles K. Mills, M. D. The American Journal of the Medical Sciences, September, 1904.

Eighth Annual Report of the Govan District Asylum, Hawkhead. Paisley, for the year ending 14th of May, 1904.

The Seventy-seventh Annual Report of James Murray's Royal Asylum. Perth.

Excelsior, the Quarterly Magazine of James Murray's Royal Asylum. Perth, April and July, 1904.

Apoplectic Motation. A Method of Distinguishing Progressive Cerebral Hemorrhage. William Browning, M. D. Reprinted from Brooklyn Medical Journal, October, 1904.

Twelfth Annual Report Ohio Hospital for Epileptics. Year ending November 15, 1902.

Thirteenth Annual Report of the Ohio Hospital for Epileptics for 1903.
Some Random Notes on Diseases of the Rectum. Lewis H. Adler, M. D. From Pennsylvania Medical Journal, Pittsburg, Pa., February, 1904.

Studies from Institute for Medical Research Federated Malay States, Vol. II, No. 2. On the Classification and Pathology of Beri-Beri. Hamilton Wright, M. D.

Experiences with Suggestion. Julius Grinker, M. D. Reprinted from Medicine.

Are the Insane Responsible for Criminal Acts? John Punton, M. D. From the Medical News, New York, October 15, 1904.

First Biennial Report of the State Hospital for Epileptics, at Parsons, for the Two Years Ending June 30, 1904. From the Fourteenth Biennial Report of the Board of Trustees of State Charities and Corrections, State of Kansas.

Twenty-sixth Annual Report of the Trustees of the Danvers Insane Hospital, at Danvers, Mass., for the year ending September 30, 1903.

Thirty-fifth Annual Report St. Mary's Industrial School for Boys.
Twenty-fifth Annual Report St. James' Home, 1904.

The One Hundred and Thirtieth Annual Report of the Eastern State Hospital of Virginia, year ending September 30, 1903.

Report of the Committee of Organization of the World's Congress of Medicine.

Trypanosoma and Trypanosomiasis, with Special Reference to Surra in the Philippine Islands. By W. E. Musgrave, M. D., and Moses T. Clegg, M. D.

Are We to Have a United Medical Profession? Charles S. Mack, M. D.

Seventy-sixth Annual Report of the Board of Directors and of the Superintendent of the Western State Hospital of Virginia for the Fiscal Year ending September 30, 1903.

Report of the Government Hospital for the Insane to the Secretary of the Interior, 1903.

The Development of Obstetric Surgery. James U. Barnhill, M. D.

AMERICAN JOURNAL OF INSANITY

PRESIDENTIAL ADDRESS.¹

A. E. MACDONALD, M. D.

Gentlemen of the Association, ladies and gentlemen.—The first thought that comes to me in assuming the duties of the honorable office to which, in your kindness, you have elected me, is of the untoward event that has opened that honor to me at least a twelve-month earlier than in the ordinary practice of the Association I could properly have aspired to it.

At your meeting in Washington, a year ago, you unanimously elected to the highest office in your gift, the then Vice-President, Dr. A. B. Richardson, Superintendent of the Government Hospital for the Insane in that city, who, as Chairman of the local committee of arrangements for that meeting had given conspicuous evidence of his ability as an organizer, and, during the most enjoyable visit to his hospital which brought the session to its close, had given conspicuous evidence also of his charm and geniality as a host.

A few short weeks afterward, and while the pleasurable memories of our meeting with him were fresh in our minds, we were shocked by the tidings of his sudden death, at the height of his efficiency and usefulness.

At the appropriate time in the course of your sessions at the present meeting, Dr. Richardson's life and works, and the suddenness and sadness of his demise, will be properly presented to you by Dr. Tobey, and it is not for me to anticipate that presentation. But, as called upon, through your great loss, to less worthily, I fear, fill his place, I crave leave to bear my personal tribute to the worthiness of my predecessor.

¹ Delivered at the Sixtieth Annual Meeting of the American Medico-Psychological Association, at St. Louis, Mo., Monday, May 30, 1904.

Last year you listened to a Presidential address that was erudite and scholarly to a degree. And why should it have been otherwise, for was not your then President also one of the four Editors of the American Journal of Insanity? I have been told by gentlemen of authority, in that they are also erudite and scholarly, though whether they constitute the other three members of the editorial corps, or no I will not divulge, that in that essay no author, living or dead, worthy of quotation, went unquoted—save one. I remedy the omission by quoting the following words:—"For a whole year such a thing as serenity of soul is unknown to the man who awakes to find greatness accidentally thrust upon him as President-elect of an Association like this. From the moment of initial apprehension to this one of extreme anxiety, the thought of delivering the annual address haunts him during every waking hour and even racks his subconscious mind while he seems to sleep o' nights." The quotation is from the Presidential address just referred to; and its author was Dr. G. Alder Blumer.

If such words could be spoken by a gentleman of the facile pen of Dr. Blumer what could be said, even under ordinary circumstances, by one whose pen is so unfacile that some of the members of the Association have been known to claim that they could not even decipher his signature? To further, not ordinary, circumstances of disability in my own case your temporary presiding officer has kindly alluded in introducing me. Had I followed my own judgment and others' advice I should have, much against my inclination, absented myself from your meeting, and defaulted in the matter of the address. But unfortunately for myself and perhaps for you, the Association is possessed of a Constitution and a Secretary.

The Constitution provides, among other things, that the President shall not only prepare an address but shall present it upon the opening day of the Annual Meeting; and the Secretary proposes to see to it that the provisions of the Constitution are carried out to the letter. Under his insistent and imperative demands that I should present myself, dead or alive, I have found it absolutely impossible to escape. Apart from the requirements of the Constitution to which I have already referred, he warned me that failing my attendance the Council would fail of a quorum,

and that other failures of dire and various import would follow in succession. After my arrival I found that precisely similar warnings and threats had been sent by him to the other members of the Council, each of whom was given to understand that all depended upon *him*, with the result that the Council had not only a quorum but a surplus.

And so I must ask you to accept in lieu of the customary carefully prepared address a few desultory notes; to regard them somewhat in the same light as the despatches such as we read every day now, under the standard head-lines "Delayed in Transmission," and, as is so often done in another deliberative body, "grant leave to print," at some future time, and after possible elaboration.

I congratulate the Association upon an attendance at this meeting which is larger than could well have been expected, in view of the date, owing to necessary deference to probable weather conditions, having been set earlier than that of customary vacations, and at a time, therefore, when duties and engagements held many members to their posts. In addition there are two particulars upon which I may especially congratulate the Association at this juncture—its reaching the sixtieth anniversary of its formation, and its reaching also that talismanic stage in the number of its membership—the four hundred. At the date of the last, or fifty-ninth, annual meeting, the membership, including all classes, stood at three hundred and seventy-four. With favorable action upon your part, if that is taken, as to the applications of candidates upon which the Council has already acted favorably and will recommend to you, the four hundred mark will be passed and a total of four hundred and twelve possibly reached.

The Association had its origin in the year 1844 when, at a meeting held in Philadelphia, on October 16, thirteen superintendents attended and formed themselves into "The Association of Medical Superintendents of American Institutions for the Insane," that title being abandoned, and the present one adopted, in the year 1892. With our assembling to-day, therefore, the Association celebrates the sixtieth anniversary of its birth, and reaches that age which is commonly accepted as that of wisdom, at least in counsel. In the year 1874, marking the completion of the thirtieth year of its existence the Association, through a committee, com-

piled and published a summary of its history and transactions, giving, in brief, details of its annual meetings, the attendants thereupon, the principal topics discussed and action taken, and references to special events of the successive years. The completion with this meeting of a second period of thirty years would seem to make this an appropriate time for the production of a second volume, and I beg to recommend to you the taking of the necessary steps toward its compilation and publication.

The office of President of this Association, with its high standing and large and distinguished membership, is one of which any incumbent cannot but feel proud, and, naturally, election to it is apt to come, as a general thing, somewhat late in life, at least in *official* life, and the words in which he first speaks to his associates are prone to be mingled ones of salutation and valediction. There is always likely to ring through them the minor key of the *Morituri te Salutamus*.

For myself, having just arranged for my withdrawal from official life after thirty-five years of hospital service, and having endeavored to prepare myself for the formal address which I had expected to deliver by the perusal of the published transactions of this Association for the sixty years of its existence, I have at the moment almost a paternal, not to say a patriarchal feeling. And this is not lessened as I survey the faces of my audience, and see among them those of several of the many who have reached high rank in our special field after faithful service as my assistants and associates, whom I am accustomed to think and speak of as "my boys," and of whom, I may confess, in confidence, I am, for the most part, not a little proud. The reading and the associations suggested an address upon the lines that "there is nothing new under the sun," and that I should appropriate for the benefit of, at least my younger, auditors, the warning refrain of Thackeray's genial rhyme "Wait till you come to forty year."

It is far from my intention to decry or belittle the progress that has been made in affairs with which we have most to do, or to write myself down as what I suppose would be called in the vernacular of the period, a Medico-Psychological stand-patter.

While I believe that affairs move largely in a circle and that in their revolutions the same point of the compass is reached from time to time, I believe also that there is a steadily ascendant

movement and a consequent improved position. And I equally believe that in such improvement, in such advance, as steady and marked progress has been, and is being, made upon our own Continent as elsewhere. I have no sympathy with the cry that is so constantly ringing in our ears: "they do this and that so much better in Europe." I believe that we can and should gain and borrow much from our confrères in other climes, but I believe also that we can and do make fair and full repayment of the loan. It is but fair to say that the material to which we are so often commended, and which if it came, like other material, under the restrictions of the tariff-regulations, would bear upon its back the hall-mark "made in Germany," or "France," or where not, is exploited not by its producers, who are becomingly modest as to its merits, but by advocates in our own country who very often know practically little or nothing about it. I do not doubt that many of you have duplicated my own experience in visiting foreign hospitals, in hearing from their superintendents deprecatory reference to the lavish praise which their establishments have gained from some of our countrymen, especially those who have never visited them. The Directors of Alt Scherbitz or Gheel, no less than their colleagues of Paris or Berlin or Vienna are the first to speak of differences in location and surroundings and customs which make possible with them methods which would be quite impracticable with us. And to attempt imitation, as we are often urged to do by sincere and well-meaning, but ill-informed, philanthropists, of some less admirably administered foreign institutions or colonies, would be to invite the organization of an informal lynching party with ourselves as the principal performers. Doubtless we have profited much from the researches and experiments of our European colleagues, and in view of the revelations of progress in other, less worthy directions with which an Asiatic nation is just now astounding the world, we need not be surprised if that little people should later give us valuable hints as to the care and treatment of the insane. For myself, I may say incidentally that when we do borrow from peoples other than our own we may, I believe, do so to as good advantage as from any other from that people who will speak to us, by tongue or pen, in language common to us both.

I had purposed calling your attention at length, and will now do

so briefly, to certain matters which, it appears to me, may properly and profitably engage the attention of the Association, possibly in conjunction with other similar organizations. One of these is the perennial question of the classification of insanity, which, often as it has been agitated and pondered, has yet failed of satisfactory adjustment. It is matter of great regret that some, at least working, agreement cannot be reached, faulty even though it should be, which will enable the alienist of one country to understand the statistics of others, and to apply them, by way of comparison, to his own. If such a standard is to be reached it would appear to me that it must be through mutual concessions and agreements of practical men such as compose our own and kindred Associations, for I opine that present conditions result from less possibly coherent elements: authors and clinicians, for example, who have the pride of their own classifications, unstable though they be, and are incapable of recognizing possible value in others. An author for the most part establishes his own individual classification, which, as a rule, proves diffuse and cumbersome, and which, altered and added to with successive editions, tends toward an ultimate approximation in the number of forms and sub-forms to the total number of individual patients coming under his observation. Such a system is, of course, valueless for the practical purposes of record-keeping in a public hospital or an aggregation of public hospitals, hence my suggestion that to those most intimately connected with the latter as represented in this and kindred organizations, we may most hopefully look for relief from present embarrassment. It is but fair, however, to confess, that the history of my own State in the matter is not encouraging. The power of the State Commission to prescribe all forms for classification and other tabulations, as well for private as public hospitals, might properly be counted upon to make for simplicity or at least for stability, and as matter of fact for several years a simple and concise classification was maintained which, without being by any means an ideal one, served fairly well the necessities of uniformity and clearness. Shortly, however, before its continuous use had covered the even period of ten years—which with the large number of patients involved would have furnished for all time a valuable basis for reference and comparison—it was superseded by another system

of questionable superiority at the best, but, in any case, of sufficient divergence to lessen the value of statistics gathered under either. And now, again, after a lapse of but little more than two years, we are threatened with still another revolution, and that in the direction of an intricate association of newly discovered or invented forms which promises little in the way of adhesiveness or permanency.

Another and cognate subject which might well share with that just referred to interstate, or even international, attention and agreement is that of statistical information in general, the subjects properly embraced within its scope and the forms and limitations desirable. Our sister body—the Medico-Psychological Association of Great Britain and Ireland—approached this subject at its annual meeting in 1902, and a committee then provided for has from time to time since made tentative reports which are most interesting not only in themselves but in the comments and criticisms which they have provoked. The statistical tables then in use in Great Britain, twelve in number, had been adopted by that association from time to time, some of them remaining unaltered for as long a period as forty years, but it was felt that, owing to lack of definition, and consequent diversity in interpretation, there was need of revision in the direction of greater correlation between the tables. In our own territory, there are to be found the same reasons for revision of existing tables, with the added reason that no generally accepted forms exist, each State or Province, or indeed each institution, being in that respect a law unto itself. It would be a decided gain if this Association, following the course of its transatlantic exemplar should revise and codify existing varying systems, and present a homogeneous system suitable for all hospitals represented in it; and it would be still more desirable if through co-operation with our English brethren a common system might be framed and agreed upon. I am not an advocate of radical and frequent changes; on the contrary my hope from a new formula would be such stability as would prevent for a long time to come the recurrent recasting and tinkering which make existing systems well nigh useless.

Foremost among the standard tables which, in my experience and judgment, are in especial need of reform is that which takes account of the discharges of patients and of their mental condition.

at that time. These tables are the constant target of question and attack, and from their mingling of different classes of patients, and the influence of transfers, etc., with other points of divergence, are capable of use, and have been used, in the exploitation of most unfair comparisons.

In the addenda to the published volume of the Transactions of your Association for last year there occurs—and it speaks well for the energy and accuracy of its Editor, your Secretary—but one note under the heading “Erratum:” which reads—Page 175, line 12; for “tabulations” read “fabrications.”

I do not accuse or suspect our Secretary of any such undue levity as tampering with either the mistake or the correction, but it occurs to me that this warning is capable of much wider application than this single instance—“For tabulation read fabrication” might well be suggested of many assemblages of figures, and especially of those by which percentages of recoveries are sought to be established. So notorious have the fallacies of such tabulations become, that all reference to recoveries as such has been omitted from several official sets of tables both here and abroad, the most notable recent action in that direction, and in my judgment a very wise one, being in the compilation of statistics for the United States official census now in progress.

In my own State again, if you will pardon the reference, which I make only because its practices are naturally most familiar to me, figures purporting to show the facts as to the number of recoveries in public hospitals in proportion whether to admissions, discharges or the whole, or average, number under treatment, have long been, and are becoming still more, palpably unreliable. If the figures of some hospitals could be accepted as absolute, an acme of successful treatment must have been reached beyond the dreams of the most optimistic. But unfortunately when read in the light of other information, where, for example, the readmissions are compared with the cures, the flattering results set forth in the latter total become much less flattering. The question of recovery from insanity is at best a most difficult one, and when upon the answer thereto depend comparisons between different institutions, or localities, or periods, that answer should be accepted with caution or even suspicion. Hospitals differ as to their clientelle, and preponderance of acute or chronic cases, curable or incurable

forms of the disease, or even of one or other sex over the opposite, will influence materially the results of hospital treatment. Superintendents differ in temperament as well as in knowledge and experience, and the sanguine will see recovery when his opposite will detect only improvement, for the personal equation enters into this as into other problems of humanity. After all, it may be said that in a general way the determination of the restoration of sanity in a person who has once been admittedly insane rests upon the detection or non-detection, upon the part of the examiner, of delusions or other evidences of the continuance of the disease. This being granted, the more skilled examiner will claim the fewer recoveries, and will always be at a disadvantage as against his less-skilled colleague and competitor.

In the State of New York, to my thinking, a source of additional error and misconception is found in the permission and practice of paroling patients, and the subsequent discharge of many of them without their return to the hospital or submission to an examination whereby their then mental condition may be determined. In some hospitals indeed, as I am given to understand, the majority or perhaps all of those patients whom it is desired to discharge are first released under parole for a definite period, and the mere fact of their failure to return within that period is taken not only as ground for discharge, but discharge "recovered." Very often it turns out that the return has been delayed for but a few hours or days, through unfavorable weather, the missing of a train, resistance upon the part of the patient, or some other comparatively unimportant happening. Occasionally there is a graver reason, the patient's enjoyment of his parole has been curtailed by his consignment to another hospital or to prison, and in more than one instance within my knowledge, his return at the allotted time has been interfered with by his death. In one notable case, indeed, the patient took his own life a few days before the expiration of his parole, but as neither he, nor information of his demise, reached the hospital on that day he was duly discharged "recovered." With this untoward event and this one entry this particular patient no doubt ceased his usefulness as a contributor to the recovery list, but those who did return, though tardily, became again eligible for re-parole and re-recovery, and how often they have contributed to these padded tabula-fabrications deponent sayeth not.

Two other enterprises which might, I think, appropriately enlist the services of this Association have reference respectively to the patients' entrance upon and exit from hospital residence. The methods of commitment of the insane vary greatly in different States, and the adoption of some one method, especially if it should result in the securing of not only uniformity but simplicity, is a most desirable desideratum. Hospital treatment for insanity should be as readily obtainable as for any other disease, and the elaboration of legal forms and processes is a dire injustice to the sufferer. Yet in some, if not in most, of our commonwealths the tendency has been steadily in the direction of such elaboration, and I doubt if, in a single instance, the prescribed methods of the present day differ in the direction of simplification from those of, say twenty, years ago.

In some States the *ultima thule* of injustice and absurdity has been reached, and trial by jury—an ancient and honorable humbug at the best—has, with its attendant publicity and scandal been forced upon the unfortunate patient, and upon his no less unfortunate family. In the State of New York this depth has not been sounded, but it is constantly threatened by the self-constituted and so-called "Protectors," who pose as bulwarks against ills which they cannot specify or define. But short of that, in the course of years, we have come to a method of commitment, exemplified by an instrument, so involved and unassimilated that few of the thousands of physicians legally qualified, attempt to execute it; that many labor under the mistaken belief that they must, instead of acting themselves, call in some specially qualified examiner; and that, from time to time, it has been found needful by the authorities to arrange for special examination of the papers under which patients are being held in order that defects might be made good even to the extent of re-examination and re-commitment. I have not known in the course of my long practical experience a single instance of wilful or malicious certification of insanity where such did not exist; and I have no reason to believe for a moment that any sane man or woman is held as insane in any hospital or asylum of our State. But I do believe, that, owing to their abstruseness and indefiniteness, and to conflicting constructions and interpretations of their requirements, scores, or even hundreds, of the commitment papers under which the

twenty-six thousand patients of the State are being held, might be invalidated upon technical legal objections.

Intervention in the interest of our patients at the other extreme of their hospital residence might appropriately find a field in such provision as would make less precipitate and disturbing the return of the convalescent patient to the world and the resumption of customary pursuits and avocations. Every superintendent must often find the need of something to help in tiding over the transition period between insanity and the hospital, and restoration and the strenuous life. Convalescent homes, employment agencies, pecuniary assistance, and other varied measures have been broached and even initiated, but I am not aware of any systematic and successful endeavor in our own country in the direction named.

In England a measure of success has attended the organized efforts of "The After-Care Association," though it is significant that in a recent summary of its objects prominence is given to the assistance which may be rendered in the return to care and custody of convalescents who relapse in the struggle. A society which accomplished this purpose alone would not be without its value.

My preparatory reading of the records of by-gone Association meetings, and coincidentally, of the annual reports for the concurrent sixty years of the particular institution to the superintendency of which I have succeeded have not alone furnished support for the contention that there is nothing new under the sun, but, per contra, have suggested other topics which, if not new, are at least undisposed of. But I content myself with the few which I have already laid before you.

Whether or no it is the human, though little creditable impulse that comes to one escaping perils to dwell upon them in the ears of those who must remain to face them, I feel the temptation to picture the snares and pitfalls that lie in the devoted superintendent's thorny path—the want of appreciation, or, worse, the mis-appreciation, of the public; the vagaries of legislators; the wailings of the journals of different shades of yellowness, from lemon to orange.

The old gentleman of the fable who amiably and conscientiously sought to follow the conflicting advices of successive counsellors in applying to the solution of the problem of intraurban trans-

portation the then prevailing motive-power, the patient ass, has long stood for the embodiment of uncomplaining submissiveness. As matter of fact, he was probably an over-rated sufferer as compared even with his congener of the present day of united and amalgamated and brotherhooded critics. At least he was not in the same class as the all-suffering psychiatrist who finds his pre-lethal purgatory in the public service.

Perhaps the fact that custom opens to the ladies at least that session of the Association's meeting at which the Presidential address is ordinarily delivered, and the consequent vista presented to me of gentler amidst sterner visages, suggest a reference to the trials that may come to you through the less gentle fragment of the gentle sex. I do not mean to disparage the great, good work that is constantly being performed by good women, official or unofficial, in behalf of the insane. If nothing else, the recollection of such work of the former kind as was performed within our Board of Managers, when we had such a Board, would debar me. I have in mind rather the proffers of the self-constituted and the unequipped, for we have always with us the older lady who, quite unable to manage her own household of two or three domestics, has yet definite and obtrusive views of the proper relation of the superintendent to his five or six hundred subordinates; or the young lady sophomore who, after two or three months of settlement-work, feels quite fitted and inspired to point out to the same delinquent the mistakes and fallacies which have marked and marred the decades of his service.

But I think of one class among the gentler sex whose members are fulfilling a certain great mission which has fallen in their way, so quietly, so unostentatiously, so modestly, bringing comfort and support alike to patients and to servitors, that their need is seldom recognized, and their public praises never sung. I doubt if even my present auditors will at once understand to whom my words apply—the wives of hospital superintendents.

And now, gentlemen and ladies, there are other topics to which it was my purpose to refer, but I feel that at the present juncture I am perhaps in better accord with my audience than I may again establish, and I prudently desist, thanking you for your consideration and courtesy, again for the high honor which you have conferred upon me, and bespeaking prosperity and success for our Association and for yourselves severally.

A CONTRIBUTION TO THE STUDY OF THE RELATION OF GENERAL PARALYSIS AND TABES DORSALIS.¹

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The intimate relation of the problems of psychiatry and neurology is well recognized, but the study of these associated problems has been fraught with difficulties, because of the arbitrary separation of neurological and psychiatric material. A beginning, however, has been made, tending towards the union of psychiatry and neurology by a more general recognition of neurological symptoms occurring in the various psychoses, which is made possible by the newer methods, lately introduced in insane hospitals.

The progress of the pathological work in these hospitals within recent years has lessened our difficulties, while greatly stimulating the clinical work. Without accurate clinical data which can be correlated with the anatomical findings, the large amount of material found in our insane hospitals is necessarily of little value in furthering our knowledge of these associated problems.

The present paper is the outcome of the more careful study of the symptomatology of general paralysis at the Worcester Insane Hospital, under the direction of Dr. Adolf Meyer, where from the large amount of material it was possible to select cases that could be thoroughly studied from beginning to end. The work was completed in the laboratory of the Danvers Insane Hospital.

That an intimate relation does exist between general paralysis and tabes dorsalis is now generally accepted, and some authors claim that the two processes are identical, from the association of clinical symptoms and from an anatomical standpoint.

The object of this paper is to present the recent investigations upon this subject and to supplement this with a series of twelve cases, carefully analyzed, clinically and anatomically.

¹ Abstract read before the New England Psychological Society, Taunton, Mass., September 27, 1904.

Our knowledge of tabes dorsalis, we principally owe to the classical work of Westphal, who described accurately the anatomical lesions of that disease, and the same author was the first one to describe, in 1878, a case of general paralysis and co-existing tabes dorsalis. Moeli reported a similar case three years later. Since then valuable contributions have been made by French and German writers. Among the first to suggest the unity of tabes dorsalis and general paralysis, after Westphal had shown their similarity, was Raymond, and he was supported by J. Nageotte, who published his "*Tabes et Paralysie Générale*" (Paris) in 1893.

Nageotte bases his opinion upon:

1st. The frequent occurrence of tabes in general paralysis, showing that general paralysis is accompanied by tabes in two-thirds of the cases, and that all forms of general paralysis and tabes may intermingle.

2d. That frequently in the earliest stages of tabes, general paralysis appears, in which cases the primary disease becomes general paralysis in its course.

3d. In the brains of tabetics that did not show marked signs of general paralysis during life, changes were found in the cortex, which were identical with those of general paralysis.

4th. Cases of general paralysis, that often become tabetic in time, in which case tabes is masked by the cerebral affection. However, both diseases may appear at the same time and run a parallel course.

5th. In all cases it can be shown microscopically that genuine tabes and genuine general paralysis existed.

Nageotte was opposed by Joffroy, Rabaud, and Ballet, who held the view that the two diseases were entirely separate and distinct, seldom found together and then only as a coincidence.

Fournier, in 1894,³ agrees with Nageotte and frequently quotes the latter.

In concluding, Fournier speaks of:

1st. Multiplicity of symptoms common to the two diseases.

2d. Possible combinations of the morbid types.

3d. Identity of causes.

³ *Les Affections Parasyphilitique*, Chap. 31, 1894.

4th. Similarity of evolution and termination of the two processes.

5th. Anatomical analogies.

He says further, "Are not tabes and general paralysis topographical expressions of the same morbid entity,—as two branches of the same tree—as two geographical localizations of the same disease? Consequently, in their interpretations we have a unified disease, which, if localized exclusively, or in a manner more or less prominent, in the spinal cord constitutes tabes, which, if in the brain constitutes general paralysis, which, if it affects at the same time the cord and brain, constitutes a mixed type—cerebro-spinal tabes.

Gaupp,⁷ while he does not deny the similarity of these diseases and admits that uncomplicated posterior column degeneration in general paralysis is identical with tabes, prefers to keep them separate and distinct from an anatomical basis.

Feurstner and Schmaus also regard the two diseases as entirely different from an anatomical standpoint.

Among recent authors who have investigated this subject, must be mentioned Schaffer.⁸ This author, after treating thoroughly tabes, goes into the discussion of the relation of tabes and general paralysis, reviews the literature, and in a most convincing manner supports Nageotte's position.

Mention of the subject is made in most English text-books, but opinions either for or against the similarity of the two processes do not carry much weight because they are not based upon actual investigations. The principal English work is that of F. W. Mott.⁹ He reports a series of cases carefully studied clinically and anatomically. His work is of especial value because of the position he holds, connected with neurological clinics as well as Pathologist to the London County Asylums, whereby he has been able to observe both tabes and general paralysis. He very strongly supports the theory of the unity of the two diseases.

⁷ *Über die spinalen symptome der Progressiven Paralyse*, Breslau, 1898.

⁸ *Anatomisch-Klinische Vorträge aus dem Gebiete der Nervenpathologie*, Jena, 1900.

⁹ *Tabes in Hospital and Asylum Practice*; *Archives of Neurology*, Vol. II 1903.

Upon the following points then, those in favor of this unity base their opinions:

- 1st. The frequency with which tabes complicates general paralysis.
- 2d. Identity of the etiology of each.
- 3d. Occurrence of symptoms in each common to both diseases.
- 4th. Similarity in the onset and progressive course of each.
- 5th. Anatomically both diseases show lesions of a similar order, but of different locations in the central nervous system.

We will confine our discussion principally to the similar etiology, symptomatology, and pathological anatomy as shown in our series of cases. As the similarity of the onset and course of both is apparent to all, it needs no particular comment.

FREQUENCY OF CO-EXISTING TABES AND GENERAL PARALYSIS.

The intimate relation of the two diseases is best shown by their association in the same subject, and to this class of cases the name *tabo-paralysis* has been given. Although this term was formerly used to denote only the cases of pure tabes, which later in their course showed the occurrence of general paralysis, it is now used to cover all the cases which show symptoms of tabes and general paralysis occurring in the same individual. For convenience they may be grouped under three forms, although Nageotte gives eleven combinations, from simple tabes to simple general paralysis, and reports cases, illustrating each form.

The three forms are:

- 1st. Cases that begin as tabes and later become general paralysis.
- 2d. Cases of general paralysis that later become tabetic.
- 3d. Cases in which both diseases occur at the same time and run a parallel course.

Cases of the first and third groups are more easily shown than those of the second, because usually the cases of general paralysis do not come under observation for several years after the onset of the disease, and at that time it is impossible to tell how long the tabetic process has been at work. In those cases the two processes must be considered as occurring at the same time, and in our experience the symptoms of general paralysis are more prominent.

The occurrence of tabetic symptoms in cases of general paralysis is more frequent than one would suppose. Statistics are based upon what symptoms one considers necessary to establish clinical tabes, therefore great variations will be found. Nageotte holds that the phenomena of tabes occur in two-thirds of the cases of general paralysis. Gaupp's investigations would place the percentage much higher, as he considers the absence of the pupillary light reflex in cases of general paralysis a positive sign of tabes. He reports thirty-eight cases of general paralysis, thirty-seven of which showed this phenomenon of tabes, and in all such cases degeneration of the posterior columns of the cord was found, in some cases only in the cervical region. He supports his opinion not only by the anatomical findings, but by the fact that in tabes the Argyl-Robertson pupil may be the only sign of that disease for years. He states that in general paralysis stiff pupils to light are usually found with absent knee-jerks, but this is not always the case, and can be found with exaggerated knee-jerks as well. No exact relation can be established, except that they are more frequently found with absent knee-jerks.

In looking over the statistics of one hundred and twenty-seven cases from the records of the Worcester Insane Hospital we find the following:

Absent knee-jerks, 26%.

Diminished knee-jerks, 6%.

Exaggerated knee-jerks, 56%.

Unequal knee-jerks, 12%.

If we base, then, the percentage of tabes occurring in general paralysis upon the absent knee-jerks as a constant symptom, it would make the percentage somewhat lower than is justified. However, we find cases with exaggerated knee-jerks and typical abetic degeneration in the posterior columns of the cord. Mott also reports similar cases; Joffroy and Rabaud give the percentage as one-third, which does not coincide with actual facts, as shown by the above observations. Another important fact to be considered, which was recognized by Nageotte, Shaffer, and Mott, is that, when the disease process predominates either in the cord or brain, in the former case the symptoms of tabes would be more marked and in the latter those of general paralysis.

It has also been shown that in cases beginning as tabes and

later becoming general paralysis, that tabetic symptoms would frequently be arrested somewhat at the onset of the later disease. Ataxia that was well-marked before the onset of general paralysis, afterwards will be almost entirely absent and other symptoms may follow the same rule. This is well shown in Case XI of our series, where the patient had a typical onset of tabes five years previous to admission to a hospital, and at time of admission, with the exception of absent knee-jerks and stiff pupils to light, no other signs of tabes could be demonstrated. In other cases where Tabes is the prominent picture the symptoms of general paralysis may be very slight and hardly recognized as such. The changes in the cortex will be correspondingly slight. The fundamental symptoms of tabes may be regarded as:

- 1st. Argyl-Robertson pupil.
- 2d. Absence of deep reflexes.
- 3d. Objective and subjective sensibility disturbances.
- 4th. Visceral disturbances (vesical and rectal paralyses, gastric crises, etc.).

It has been pointed out by Gaupp and others that a diagnosis of tabes can be made by the absence of the pupillary light reflex combined with any of the other symptoms, or even by the presence of the first symptom alone. Then we see that the occurrence of tabes with general paralysis is more frequent than a mere coincidence would warrant, as held by Joffroy and Rabaud, and its occurrence in two-thirds of the cases is supported by statistics.

ETIOLOGY OF TABES AND GENERAL PARALYSIS.

It is not our purpose to quote the various opinions regarding the etiology of general paralysis and tabes or to give the statistics of the various investigators. Since Eiseman and Topinard, in 1863, expressed the opinion that syphilis was probably the cause of tabes there have been many who were unwilling to agree to this doctrine, but of late years it is becoming more generally believed. As Gaupp, 1898, says, "The opponents of this theory have not all disappeared," and there will probably always be a difference of opinion on this subject. One of the strongest points brought against the syphilis theory by the opponents is the fact that a history of a previous infection cannot

be obtained in all cases. Yet, it is a well-known fact that in recognized tertiary syphilis where the patients are not necessarily insane and can give a correct account, if they desired or knew the facts, no larger percentage of syphilis is obtained than in cases of general paralysis. Lange, in Vienna, is only able to obtain a history of syphilis or demonstrate previous syphilis in 36½% of cases suffering from tertiary syphilis. It is only by investigating every case thoroughly and exhausting every means of ascertaining the existence of previous syphilis, that we can form any opinion upon the subject. We do not have to go very far back to find clinical records of general paralysis in our hospitals which contain no history of syphilis, yet it has been recognized abroad for some years as the most prominent, if not the sole cause of general paralysis and tabes.

We will cite our experience in compiling statistics from the records of the Worcester Insane Hospital, and those records were no worse than those in other hospitals at that period. If we begin with 1896, the year in which newer methods were instituted and select cases of general paralysis that came to autopsy, the majority of which were admitted before the new régime, the following is found:

Year.	Number of Cases G. P.	Syphilis.	Probable Syphilis.	No statement.	Unknown.	% Syphilis.
1896	12	3	..	9	..	25
1897	16	7	4	5	..	44
1898	15	9	4	..	2	60
1899	12	8	3	..	1	66½
1900	16	10	4	..	2	63
1901	12	9	2	..	1	75

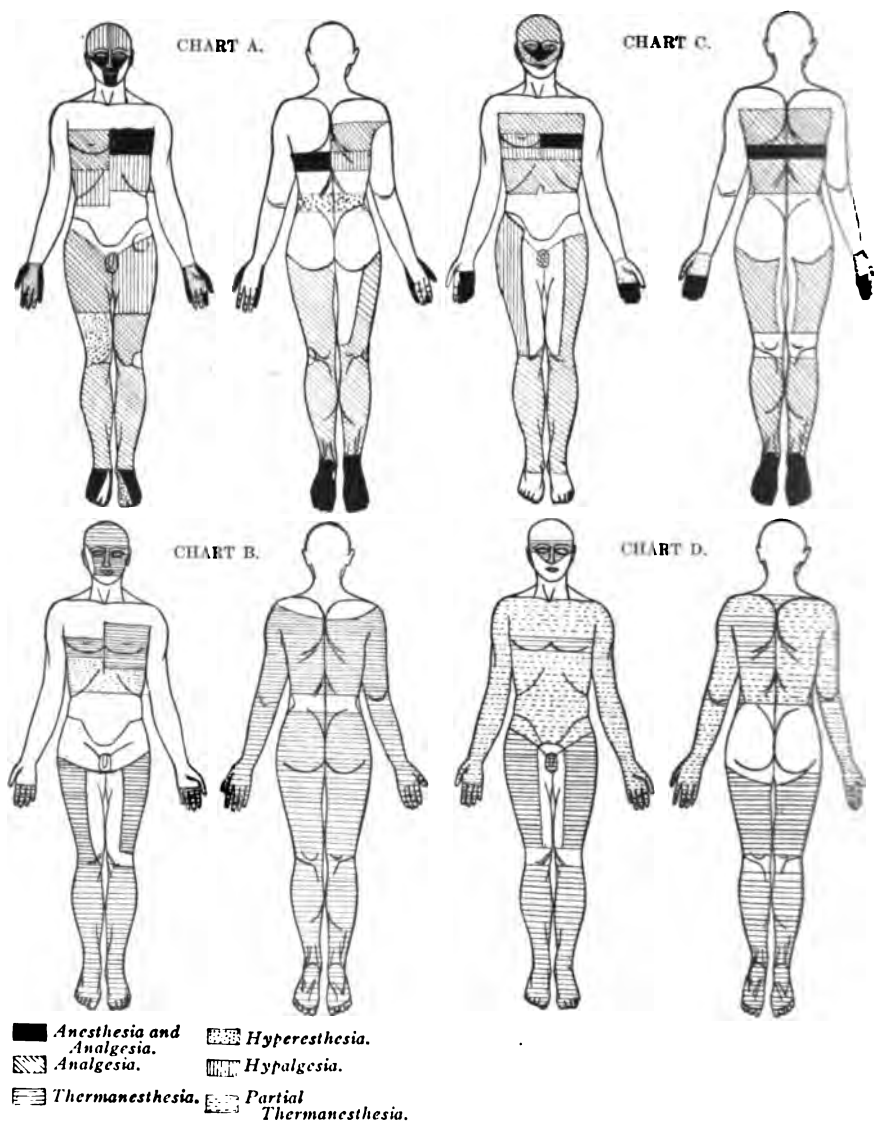
It takes but little study of the above table to show its significance; we see a gradual increase in the occurrence of syphilis in these cases of general paralysis, from 25% to 75%, and a notable decrease in the "no-statement" class. Is it because syphilis was on the increase that it was found more frequently in these cases? If so, and it was merely a coincidence, when found in general paralysis, it would then appear in other forms of mental disease. But such is not the case, for only a very small percentage of other psychoses show a history of previous syphilis. The reason, then, is plain, that previous to 1896 the subject of the relation of syphilis to general paralysis had not been thoroughly investigated,

but when more attention was paid to this subject the percentage showed a marked increase. As a further proof that this was not merely a coincidence in these cases reviewed, the other cases of general paralysis that did not come to autopsy were also examined, with similar results.

Cases of conjugal tabes, general paralysis, and tabo-paralysis have been collected by Mendell, Roeche, and Mott. Syphilis was found to be present in either husband or wife in all but one case collected by Mott, and in a large per cent of the cases reported by the others. This argues much in favor of syphilis as the origin of the two diseases. Another potent argument in favor of syphilis is also found in cases of juvenile general paralysis and juvenile tabes which have been reported, and the same etiological factor was present in the majority of cases of both, namely hereditary syphilis.

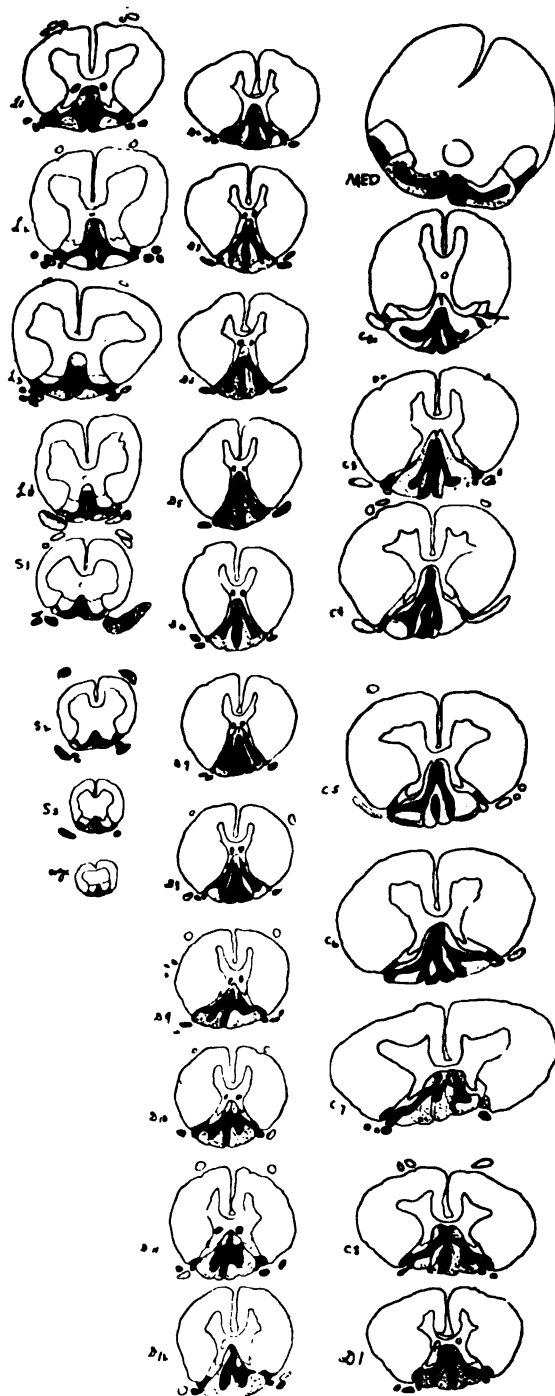
In tabes, the percentage of cases with a history of previous syphilis is much greater, as it is a much easier matter to establish this fact, than with demented general paralytics. Erb gives 90% with syphilis in a series of 900 tabetics and some writers give even a larger percentage. The occurrence of syphilis in other diseases of the nervous system is only from 16% to 24%. This would certainly go to prove that its occurrence in tabes was more than a coincidence. It seems hardly necessary to refer to the well-known experiment of Krafft-Ebbing, a few years ago. He inoculated a number of cases of general paralysis with syphilis and failed to produce that disease in any of them. In these cases syphilis was not only denied, but no visible signs of that disease were found upon the patients. Knowing the great virility of syphilis, also the law of immunity from subsequent infection, this experiment speaks much in favor of syphilis as the etiological factor in these diseases.

Because it is impossible in a small percentage of cases to establish positive syphilis, we are not justified in absolutely excluding it as a cause in these cases, and the weight of opinion seems to favor syphilis as the most important factor in the causation of general paralysis and tabes. Just how it acts in this role has not been satisfactorily explained, or why different portions of the central nervous system are selected is also unexplained. It is not warranted to presume that the syphilitic poison acts on the



NOTE.—Charts A and B, made from examination, November 12, 1900. Charts C and D, made from examination, December 4, 1900.

Case I.



NOTE.—In the diagrams of cord sections drawn with the aid of a camera lucida complete degeneration is indicated in black, and partial degeneration by black dots.

central nervous system in a manner analogous to alcohol, lead, and other poisons, which may produce a morbid process in the brain, cord or peripheral nerves in different individuals, although the disease process attacking these various regions is essentially the same. This is the stand taken by Mott, and it seems reasonable. Just what factors determine this selection cannot be explained. In regard to the other so-called "causes" of general paralysis the following table compiled from 191 cases is of interest.

Other Causes.	% With Syphilis.	% Without Syphilis.
Trauma.....	2.6	1.5
Trauma and Heredity..	1.	1.5
Trauma and Alcohol..	1.	..
Heredity.....	7.3	3
Heredity and Alcohol..	3	5
Alcohol.....	6	3
Stroke.....	1	..

By looking over the above figures it will be seen that a grave error is made by giving equal prominence to the other "causes," with that given to syphilis. They are present in comparatively a very small number of cases. That they have an important rôle as accessory causes cannot be doubted, for they surely lessen the resistance of the nervous structures to the effect of the syphilis poison.

CASES.

Complete abstracts of twelve cases are herewith given, ten of which are from the records of Worcester and two from the Danvers Insane Hospital. They are selected because they present such clinical symptoms and anatomical findings as illustrate the various types of tabo-paralysis.

Case I.—Tabes with mental symptoms (G. P.?). Classical tabetic symptoms. Expansiveness. Lack of judgment and deterioration. Epileptic seizures. Gastric crises. Lancinating pain in legs. Ocular paralyses. Syphilis probable. Died of lobar pneumonia. Duration eight years. Autopsy—Degeneration of posterior columns of cord. No typical changes of general paralysis in cortex.

P. K. Aet. 48. Male. Married. Designer.

Family history shows some heredity. Paternal uncle insane. Father violent and uncontrollable temper. Brother insane, depressed, committed suicide. One sister of unbalanced mind. Paternal grandmother epileptic. On maternal side, marked eccentricity.

Personal history.—Patient was born in Germany. Early development normal. Common school education, and apt at studies. Good worker in woolen mill till æt. 26, when he came to America. He drank beer at times, but never was intoxicated. His wife claims he had some private disease in 1863, but it is denied by patient. Probably sexual excesses since marriage. No miscarriages are known of in wife. Patient was of a nervous disposition and especially when overworked. Had "rheumatic fever" just before coming to America. In fall of 1892, eyes became swollen, for which he was treated and cured. Again became inflamed in 1893 and he spent three weeks in a dark room. He went to Dresden for treatment.

The onset of his mental trouble was about at this time, 1893, while in Europe. Marked extravagances, buying \$1000 worth of shawls, laces, eight or ten suits, watches, etc. He returned in 1893 to take another position. After that he seemed strange, would sit and seemed absorbed, would not speak. In November, 1893, mill shut down (dull) and he became distracted and worried. It was then that he had his first "fit" during night and was unconscious for 15 minutes. He talked in German and did not recognize those about him. No incontinence. He worked next day, but after that was easily irritated, scolding and forgetful.

In January, 1894, patient had a second "fit." There was no incontinence of urine or feces, and no tonic or clonic spasms. He was unconscious for an hour, then random talk following. March, 1894, he had another fit, after which he became excited and dangerous. He climbed upon chiffonier, broke mirror, smashed dishes, etc. However, he was able to work the next day. Since April, 1894, forgetful. He would abuse the help because orders he had given had never been carried out. He became more scolding and unreasonable, frequently quarreling with wife and others. Resigned his position in 1894 after a row. He packed up all his things and left home while wife was away. About August 1, had another fit and from thence every six weeks or so. He became more forgetful, cross and abusive to children and wife. He was committed to Worcester Insane Hospital, March 15, 1895, as squandering money, refusing advice, control, or treatment, and displaying poor judgment.

At the hospital he was quiet, gentlemanly, admitting only two fits, and denying abuse. He was inclined to wander from the subject and was somewhat demented. April 9, had two fits—moan, head drawn to right, slight internal strabismus of right eye (persistent). There was amnesia for both fits. June 24, severe fit followed by marked facial paralysis, dullness, confusion, and difficult articulation. In November, constant fretting and brooding over detention, and on the 21st a slight fit; fell, but rose and walked alone. Winter of '95, pleurisy, shooting pains in legs (?) off and on. Last of September, 1897, unilateral interscapular pains, regarded as epileptic equivalent by patient because of accompanying gastro-rectal sensations.

October 27, physical examination shows mitral systolic murmur and moderate arterio-sclerosis. Patient complains of paroxysms, pain in

rectum and shooting pains in limbs. Argyl-Robertson pupils, external strabismus of left eye. Knee-jerks absent. Ataxic gait. Thick, stammering speech. He had several gastric crises. He escaped March 29, 1898.

He was again committed to Worcester, January 21, 1899, as being forgetful, abusive, and egotistical. He was violent and seclusive six weeks before commitment.

PHYSICAL EXAMINATION, JANUARY 24, 1899.

Eyes.—Pupils unequal, right slightly larger than the left. Immobile to light, only slight reaction to accommodation. Complete paralysis of left external rectus. Marked weakness of right external and internal recti.

Smell.—Probably normal.

Gait.—Uncertain, wide, and stamping. Marked swaying in Romberg, and incoordination of hand and foot movements. Facial movements weaker on the left.

Speech.—Defective. Marked slurring and stumbling since 1897.

Cutaneous sensibilities.—Touch normal, except on ulnar sides of hands and little fingers (especially right), on lower half of legs and on feet, also both sides of forehead. When touched with pin or with hot and cold tubes, often says, "You're not touching," though localizes finger tips well.

Pain sense.—Absent on both sides of forehead, ulnar sides of hands, especially right and lower half of legs and feet (especially outer sides of legs).

Temperature sense.—Not diminished except legs and feet, where discrimination is slow, though correct.

Reflexes.—Knee-jerks absent. Elbow- and wrist-jerks normal. No ankle clonus. Cremasterics and abdominals prompt.

Heart and vessels.—Temporals and radials thickened. Mitral systolic murmur heard in recumbent position.

Urine.—Nothing unusual except at times temporary albumen.

PROGRESS.—Patient continued about the same, at times showing marked expansiveness (especially in letters, claiming to be a great inventor, etc.). He had absolutely no insight into his condition, and showed marked deterioration and lack of judgment. He had frequent gastric crises, and lancinating pains in legs, which could only be controlled by morphia. Epileptic seizures were also frequent, for which he always had amnesia.

PHYSICAL EXAMINATION, MARCH 3, 1900.—Showed the disease to be progressing slowly. The knee-jerks and elbow reflexes are absent. Pupillary phenomena practically the same.

Cutaneous sensibilities.—Touch not impaired. Localizes promptly over whole body.

Pain.—Analgesia over ulnar surface of both forearms, both sides of forehead and cheeks, and both lower extremities. He feels the impact, but is unable to tell whether it is dull or sharp.

Temperature sense.—Reaction accurate except for both feet.

Muscular sense.—He is unable to tell position of toes, but he has no difficulty with the hands and fingers. There was decided fibrillary tremor of tongue and slurring, thick speech. *Gait* had become very unsteady and staggering. Unable to stand in Romberg position. *There was a typical jack-knife reaction of both legs.*

PHYSICAL EXAMINATION, NOVEMBER 12, 1900.

Patient was in bed at this time, suffering with lancinating pains of right leg. The physical signs were practically the same as in last note.

Cutaneous sensibilities.—*Pain and touch absent.*—Anterior part of cheek and chin, a wide band covering left nipple. Thumb, little finger, and extending to wrist, forefinger from first phalangeal joint on both hands. Both feet outer surface from second toe, and on right foot inner surface of big toe. Posteriorly, a band half way across back on left, below similar area anteriorly. Soles of both feet except inner side of left instep. Both thumbs and little finger to wrist.

Pain absent.—Anteriorly, a wide area over right nipple, right thigh to a point half way to knee where there was an area of acute hyperæsthesia even to touch on left thigh, the corresponding area the pain touch was absent, also both lower legs except for outer side of each knee. Posterior area over right shoulder extending across right arm, whole of left leg except for outer side of knee, outer side of right thigh, right leg, except for an area of hyperæsthesia on outer side of knee; genitalia. An area of hyperæsthesia extending across small of back.

Pain diminished.—Both sides of chest, but unequal in length below anæsthetic areas. Forehead and left thigh, palms of both hands and middle fingers. Posteriorly, a band corresponding on right to area of analgesia.

Temperature sense.—Absent anteriorly. Forehead and face, except right cheek and chin, areas on chest unequal on both sides. Fingers on both hands, outer side of thigh, both legs, except left knee. Posteriorly, whole of back except a band at small of back, arms, and legs.

PHYSICAL EXAMINATION, DECEMBER 4, 1900.

Patient was able to cooperate fully with physician in these tests. There were no lancinating pains in legs.

Cutaneous sensibilities.—Pain and touch absent on nose and both cheeks. A broad band covering left nipple to median line, one-half of palm, and three fingers on right hand front and back, and all fingers of left hand. Soles of both feet. Posteriorly a band just below the anterior band, on back.

Analgesia.—Anteriorly on forehead; a broad band above the nipples. Below, a band of diminished sensation including left and right nipple is another area of anæsthesia extending to abdomen. Outer side of left thigh, both lower legs and genitalia.

Posteriorly whole of back, thighs to within a few cm. of knees, then both lower legs below knees, and back of right hand. Pain diminished anteriorly, outer aspect of right thigh. An area of *hyperæsthesia* below cheeks to lower lip.

Temperature sense.—Absent anteriorly, eyebrows, nose, and cheeks, band across nipples, fingers of right hand, outer side of thigh to knees, genitalia. Lower legs from knees down and feet. Posteriorly, left shoulder and left half of back to middle of thoracic region. Both thighs to knees and lower legs below knees. Diminished over rest of body except under surface of knees, buttocks, and neck.

Patient continued in bed after this, becoming more demented, dull, and unable to co-operate. He died February 4, 1901, of lobar pneumonia. Autopsy sixteen and three-quarters hours after death—Dr. C. B. Dunlap.

SUMMARY.—Lobar pneumonia of left upper and lower lobes. Heart muscle opaque and soft. Kidneys, cortex turbid, pale, swollen looking. Atheroma, moderate, of aortic valves, ring, and beginning aorta. Granulation small and white on mitral flaps. *Brain.*—Weight 1640. Dura slightly adherent to calvarium. Pia of convexity milky haziness in sulci, especially over frontal lobes. About temporals toughened, making it extremely difficult to separate lobes. Vessels everywhere injected. Pia of base thin, but tough. Cisterna fairly clear. No distinct granulations can be made out in 4th ventricle.

Cord.—Pia of cord decidedly tough and somewhat thickened. Section in thoracic region showed considerable grayness in posterior columns. This is not so distinct in cervical, but marked in lumbar region. Unfortunately, the posterior ganglia were not studied systematically in the case.

Microscopical examination.—Brain-cortex stained by Nissl method.

None of the typical changes of general paralysis could be demonstrated in the sections examined (left frontal, right and left paracentral). Superficial layer of cortex is normal and cortical architecture is preserved. The vessels are somewhat thickened throughout the sections. Under high power, the nerve cells show but little change. The pia shows moderate thickening of connective tissue. Among the fibers lie cells, some of which contain yellow pigment. A few lymphocytes are found and an occasional plasma cell in the pia. The glia cells show no proliferative changes. Nuclei lie evenly scattered among the nerve cell layers. Most of these nuclei have bright yellow pigment granules around them and occasionally the nuclei lie in small groups. The blood-vessels have slightly thickened walls and often pigmented phagocytes lie in or about the vessel wall. None of the vessels show a true infiltration and no undoubted plasma cells were found in the sections examined. Other regions, however, were not examined and it is very unfortunate, as it is impossible to say whether general paralysis was or was not present in this case.

Cord.—A series was stained by Weigert Pal method for medullated fibers. The posterior roots below the 7th cervical, in some cases more than others, are degenerated down to the second lumbar and from that segment degeneration is less marked. The posterior root bundles showed a corresponding degeneration marked throughout the thoracic and lower cervical segments. Lissauer's tract was moderately degenerated, only the upper cervical region showing many fibers. The exogenous systems are

markedly degenerated and even throughout the endogenous systems there is slight degeneration. The ventral root zone is almost intact. The plexus of fibers around the cells of Clark's column is shown degenerated throughout its length. The ataxia was very marked in this case and certainly corresponds to the affection of the endogenous system and Clark's column. The cutaneous sensibility disturbances correlated with the degeneration of the posterior roots are shown in this case. The posterior columns are shrunken, distorted, and in some regions flattened. The meninges of the cord are generally thickened and show evidently meningitis. It is noticeable that the blood-vessels in the posterior column show more changes than those in other regions.

Case II.—*Tabes preceding general paralysis by three years. Circular form of psychosis. Lightning pains. Ataxia. Paralysis of rectum and bladder. Incoordination. Epileptiform seizures. Trauma and syphilis. Autopsy. Changes of general paralysis in cortex. Far advanced tabetic degeneration of cord.*

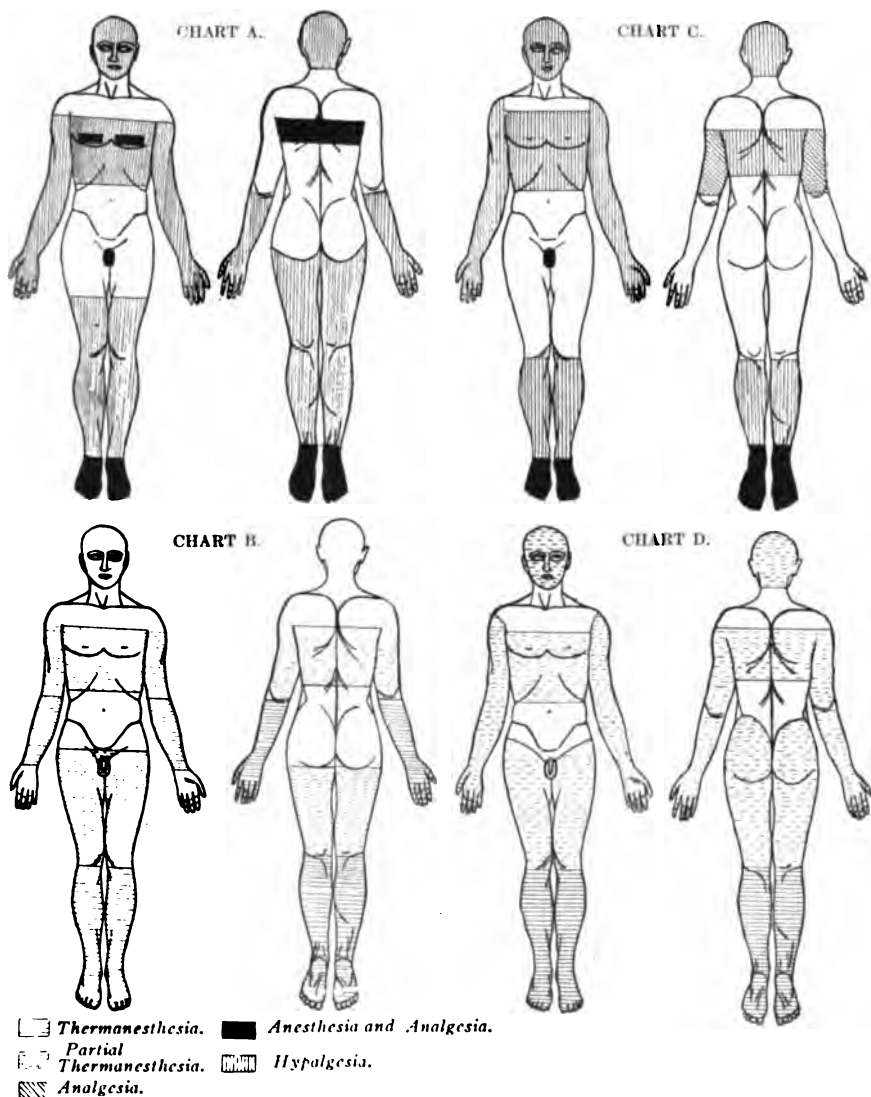
J. K. Aet. 42. Seaman and laborer. Widowed. Male.

Family history—Negative as far as known.

Personal history.—Born in Sweden. Early development normal. Came to the U. S. in 1883. Married in 1884. His wife had three children and three miscarriages. Two children died of marasmus. Patient admits having had syphilis.

Illness and trauma.—Patient was healthy as far as known. Seven years ago he fell from a scaffold and landed on both feet and was considerably shaken up. A year later he began to throw feet in walking. About three years ago he had lightning pains in his legs, and lower part of back.

Onset of psychosis.—In 1897. He became much depressed and emotional at time of his wife's death. This spell only lasted a few weeks, after which he resumed his work. Two years ago he developed ataxia, and was unable to walk at times. He had frequent attacks of lightning pains in his legs. It was then noticed that his mind was unbalanced. He acted in a peculiar manner, became depressed and mute. He made no attempt to occupy his time, but remained in bed. These depressed spells alternated with periods of wild excitement in which he attempted suicide. This state of affairs became so grave that he was committed to Boston Insane Hospital on November 12, 1900. There he was reported as being excited, dull, and stupid. During the first five days he had periods of excitement, during one of which he attempted to strangle himself. At other times was depressed and could not be induced to talk. On the 14th of November he had an epileptiform convulsion. On the 19th there was inequality of the pupils—right larger. He apparently suffered much with pains in legs and girdle pains, and at times pain in head. He was very weak and was kept in bed under observation for two weeks. He continued to improve and was soon able to sit up all day. He was committed to Worcester Insane Hospital, December 6, 1900.



NOTE.—Charts A and B, made from examination, July 23, 1901. Charts C and D, made from examination, October 7, 1901.

On admission he could only walk with help, and resisted blindly the attentions of attendants and refused food. He was put to bed and complained of pain in bowels. He muttered and mumbled indistinctly in Swedish. The next day he was more restless and had to be catheterized because of retention of urine. He was fairly well oriented for time and place, but much confused, and had some insight into his condition. He soon became irresponsive, inattentive to questions, restless with some agitation when approached by anyone. He kept his eyes closed and was in a deep stupor.

PHYSICAL EXAMINATION, DECEMBER 18, 1900. (Patient was in above condition and did not co-operate with physician.)

Poorly nourished man of medium height. A great many small white raised scars over lumbar region and buttocks. Right nostril larger than left and covered with dried blood.

Eyes.—Beginning arcus senilis. Pupils equal, central and regular, 2 mm. No perceptible reaction to light or to squeezing, but both react to accommodation. Vision apparently not impaired.

Hearing and taste normal.

Smell somewhat affected on left side.

General sensations.—Complains of shooting pains in legs frequently, also pain in bowels.

Cutaneous sensibilities.—No areas of anæsthesia found. Touch not affected, though tests are unsatisfactory because of patient's indifference and stupor. Temperature sense not affected except on ankles and soles of feet.

Reflexes.—Knee-jerks, knee-cap reflexes, and Achilles and plantars entirely absent. Elbow reflexes not obtained. Forearm slight. Cremasterics slight on left, none on right.

Motor functions.—No facial paralysis, nor diminution of power of extremities. No tremor of the tongue. No marked incoordination of hand movements, but distinct in legs and feet. His legs flop about and gait was ataxic and staggering, unable to walk without assistance.

Speech.—No marked defect observed. Unable to speak test sentences.

Lungs.—Negative.

Heart and vessels.—Slight degree of atheroma. No murmurs. Pulse 80.

Abdomen.—Scaphoid in shape. No tenderness on pressure.

Bladder and rectum.—There was complete paralysis of bladder, necessitating daily catheterization, and bowels were only moved by enemata.

Urine.—1020. Albumen present. Excess of leucocytes, mixed with mucus. No casts. Later he developed cystitis which disappeared under treatment, and occasionally would urinate voluntarily, defiling bed.

PROGRESS.—He remained about the same, depressed, inactive, but did not resist the attention of attendants. He gave negativistic answers to all questions.

July 22, 1901. He seemed brighter, responded promptly and pertinently to questions. He exhibited a marked memory defect, but was oriented

well for time and place. Unable to explain depression, but said he had not been the same since wife died. Some emotionalism. No delusions or hallucinations elicited.

PHYSICAL EXAMINATION, JULY 23, 1901.—Same as last except for *Cutaneous sensibilities* (able to co-operate fairly well). Pain and touch lost over a quadrangular space around both nipples, genitalia, feet from ankles down, and a large band posteriorly just below shoulders. *Pain much diminished* over head, outer portion of chest, arms and legs from middle of thigh downward. Posteriorly, forearm and hands, whole surface of legs. *Temperature sense* diminished over chest and thighs anteriorly and posteriorly. Absent on forearms, lower legs, soles of feet, and genitalia.

He remained the same, becoming more cleanly in habits, passing urine, and his bowels moved without enemata. On September 3, 1901, he was visited by a friend, whom he recognized and talked about family.

October 7, 1901. Patient was somewhat brighter. Remained in bed oriented for place, but not for time. Marked memory defect. Some insight into his condition.

PHYSICAL EXAMINATION (same date).—Practically the same as formerly. Speech showed more slurring in test sentences. More tremor of tongue.

Cutaneous sensibilities.—Patient co-operates fairly well. Sense of touch present everywhere except genitalia, all of feet below ankles, where pain is also absent. Pain absent on posterior surface of upper arms. Much diminished over chest to rib margin. Anterior aspect of arms and hands and lower legs, head front and back posteriorly, back and lower legs.

Temperature sense.—Much diminished everywhere except upper part of chest, abdomen, upper part of back, and middle of back to buttocks. Absent, genitalia, lower legs front and back.

He gradually became more talkative, showing more spontaneity. On December 4 he told the physician that he heard voices talking about him, and thought he was being persecuted. He soon developed delusions of persecution (the attendants wanted to get rid of him because he had no money). He gradually became very talkative and showed marked spontaneity and activity, also some exhilaration (was as a new man and wanted to go out to work; felt fine). He was voluble and exhibited flight of ideas and formal associations. He was unable to explain his depression. He admitted having had syphilis for the first time.

PHYSICAL EXAMINATION, DECEMBER 17, 1902.—Same except for *cutaneous sensibilities*, which show a marked change. Touch absent on feet below ankle and diminished over a small area on anterior surface of upper arm. *Pain* sense diminished over chest except for a small longitudinal area in median lines, outer surface of both lower legs, and head, front and back. Wide band across back. Areas of anaesthesia found on inner surface of forearm anteriorly and posteriorly, upper arm, and inner side of forearm. *Temperature sense* absent on both feet below ankle and penis. Diminished upper part of each arm, both legs front and back. Small area lower part of back and posterior aspect of hands.

He was able to co-operate fairly well, but soon showed marked manic traits. Sample of production:

(Shown keys) "These the keys—brass keys, monkey, all kinds of keys—play monkey, they have whiskers on their face, cocoanut, milk same as hard coffee, caught some from Persia." He was very irrelevant and flighty and talked rapidly whenever spoken to, in above strain, distractible, rambling, and incoherent. A specimen of his handwriting showed characteristic tremor. He became more excited and exhilarated, whistling and singing, and soon this state alternated with periods of depression. In the morning he would be in deep depression and without any warning he would become maniacal, and these sudden changes kept up for six weeks, when he began to fail rapidly. He became destructive to clothing and filthy, and completely lost as to his surroundings. He became more excited, talking all the time.

He died March 31, 1902, of lobar pneumonia. Autopsy four and a half hours after death—Dr. C. B. Dunlap.

SUMMARY.—Lobar pneumonia of both lower lobes. Ecchymoses in mucous membrane of stomach. Mesenteric glands enlarged. Thickening of mitral and tricuspid valves. Brain, weight 1385 grms. Moderate amount of slightly turbid fluid in pia, very little in subdural space (100 cc. drawn off by lumbar puncture). Pia of convexity in frontal and central regions is hazy, with many yellowish-white clumps in posterior half of first frontal convolution and about upper parts of central, also some yellowish streaking in this area. Pia thickened in front of anterior central convolutions. Between frontal lobes pia is very tough and adherent to brain substance. Left sylvian fissure contains a cystic cavity, broken open in removal, which leaves the fissure widely open. Arteries, a few small clumps of yellowish-white thickening in Sylvian, but posterior cerebrals are free. No granulations seen by artificial light in 4th ventricle.

Cord.—The posterior median columns in cervical region are distinctly gray and translucent as far down as 10th thoracic segment. There is a gray line in cervical segments and in upper thoracic where posterior roots enter. Between this and the posterior median columns the posterior lateral columns can be followed down as a white streak to about 7th thoracic segment on the left and the 10th on the right. These streaks become narrow in the thoracic region and face out indefinitely. The roots are distinctly gray in the lumbar and sacral segments. This is very striking and the anterior and posterior roots can be easily distinguished in *corda equina*. Other roots which are decidedly gray are those of twelfth thoracic—L. th 11, L. th 2-3-4-5 with the corresponding slight grayness in the roots of the right side of the last four segments. There is little difference in anterior and posterior roots in the cervical segment.

Microscopical examination.—Cortex by Nissl method shows well-marked and advanced changes of general paralysis.

Cord.—Schaffer's method for medullated fibers.

The posterior roots and root zones are intact as far as the 6th cervical region, but in the 7th are degenerated and from there to the 8th thoracic

these zones are completely degenerated. The lower thoracic roots have some fibers intact; also the first three lumbar segments, but below this they are completely degenerated. The posterior root degeneration in this case corresponds with the affected areas of cutaneous sensibilities as shown in the diagram. Lissauer's tract shows some fibers in the cervical and upper thoracic segments, but they are few and below these segments the tract is almost completely degenerated. The column of Goll is completely degenerated. Some degeneration is seen of the comma tract, ventral posterior zone, and other endogenous systems. Clark's column shows degeneration of the plexus of fibers and the great ataxia seen in this case is well accounted for. The posterior column is somewhat flattened, especially in the lower segments and meninges slightly thickened.

Case III.—*General paralysis and tabes coincident. Demented type. No history obtainable. Syphilis not established. Rapid progression. Epileptiform seizure. Duration two years (?). General paralysis changes in cortex. Cord. Posterior column degeneration. Right knee-jerk returned after convulsion of right side.*

G. W. R. Aet. 61. Carpenter. Single. Male.

Family history.—Unknown.

Personal history.—Patient was born and has lived in Millbury all his life. He was single. Beyond this nothing could be learned, as he had no friends. He was committed to Worcester Insane Hospital, January 7, 1902, as being wild and excited, talking a great deal, and fabricating. He had a finger amputated some time before admission and he tore the dressings off constantly. He had been sleepless at night and kept everyone in the house awake by his noisy actions.

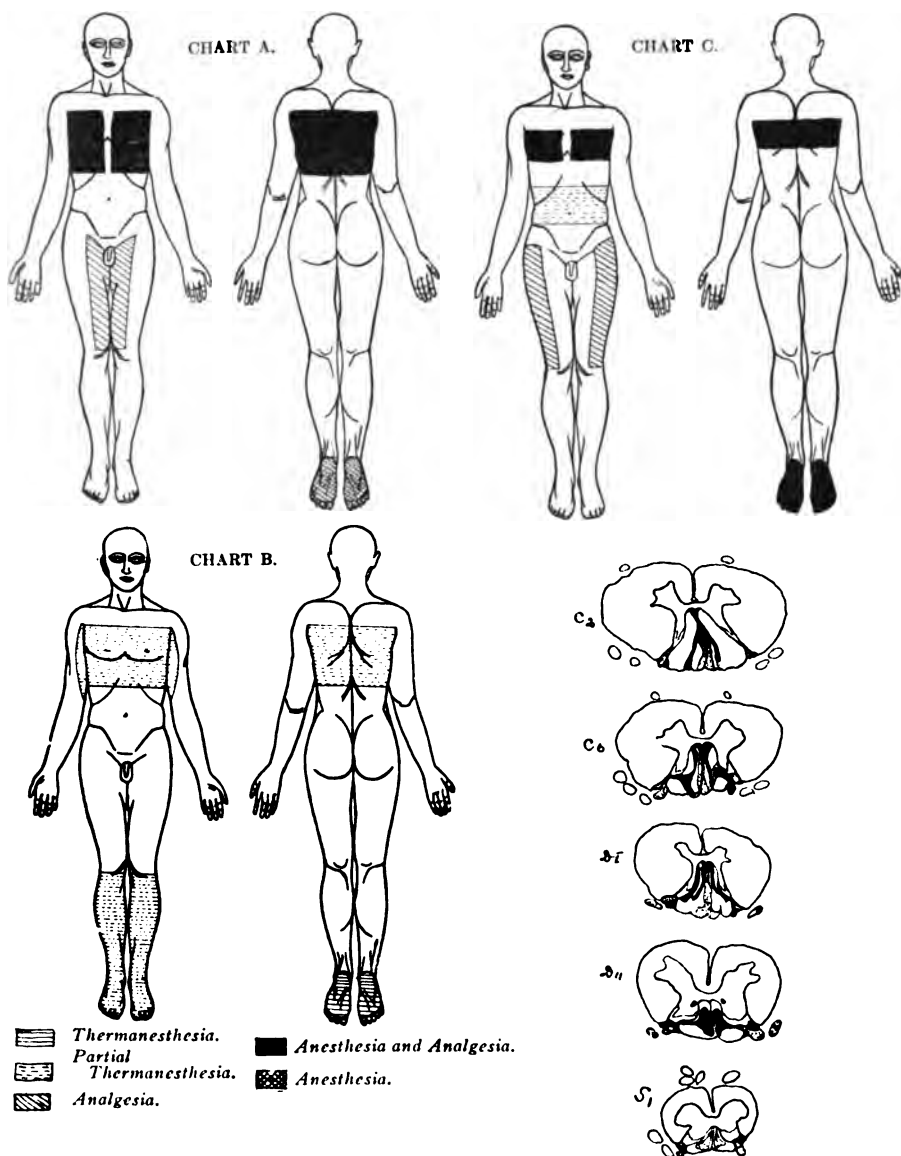
On admission he was noisy, resistive, and much demented, unkempt in appearance, and filthy in habits. He was very weak and not able to walk without assistance, so he was put to bed. He soon became more quiet, but remained somewhat exhilarated and talkative.

Mental status taken January 14 showed a completely demented man, entirely lost as to his surroundings and unable to give any clear account of himself at all. He answered questions in a rambling, incoherent manner, showing little appreciation of what was asked. It was difficult to keep his attention and questions had to be repeated many times. He had absolutely no memory and intellect was very much deteriorated. No insight whatever into his condition.

PHYSICAL EXAMINATION at this time was rather unsatisfactory, as he would not co-operate with physician.

An elderly man, somewhat emaciated, with flabby musculature, general condition poor. Tibial crests rough and saw-like. No enlarged glands noted. Circulation poor with a considerable degree of arterio-sclerosis. General feeling of well-being and contentment.

Eyes.—Beginning arcus senilis. Pupils equal, central, and regular, pin-point in size and no appreciable reaction to light or accommodation. Vision impaired, but no hemianopsia.



NOTE.—Charts A and B, made from examination, January 9, 1902. Chart C, made from examination, January 19, 1903.

Hearing.—Much impaired in both ears.

Taste and smell not impaired.

Reflexes.—Knee-jerks, knee-cap, and Achilles absent on both sides. Elbow and forearm reflexes normal. Cremasterics and abdominals brisk. Plantars normal.

Cutaneous sensibilities.—*Pain and touch* lost over both nipples in broad band from axilla to costal margin, except in median line, where it was present. This girdle extends also posteriorly on back. *Touch* lost also on soles of both feet. *Pain* absent anterior surface of both thighs, also on forehead. *Temperature* sense diminished over areas of anæsthesia anteriorly and posteriorly, especially for heat, lower legs and inner portion of both arms, absent on feet below ankles, otherwise normal.

Motor functions.—No facial paralysis. Tongue median with marked fibrillary tremor. Tremor of lips when talking and distinct coarse tremor of hands and fingers. Marked incoordination of feet and hand movements. Grasps and general muscular power poor but symmetrical. *Gait* ataxic, unsteady, and tottering. Much swaying and unsteadiness in Romberg position.

Speech.—Marked defect in ordinary conversation, rolling, slurring and stuttering, hardly intelligible.

Writing defective with characteristic tremor.

Sexual organs.—Scrotum deeply discolored and a dark red color. No penile scar, and syphilis denied, though statements are not reliable. Urine negative.

PROGRESS.—Patient improved for a while, but never could give any clear account of himself, because of his profound dementia.

The knee-jerks remained persistently absent and general condition became progressively worse.

Examination for sensibility disturbances showed very little change and patient would not co-operate well.

Cutaneous sensibilities (January 19, 1903).—*Pain and touch* absent over nipple in narrow girdle broken over sternum where sensations are not impaired. This girdle extends posteriorly also. Absent on soles of both feet. *Pain* absent outer side of thighs anteriorly. Otherwise normal. *Temperature* sense much diminished in a girdle over abdomen, and soles of both feet where it is apparently absent at times. Patient reacts better than in former examination.

February 1, 1903. He had a slight apoplectiform seizure involving right side, and has since been in bed, as he is failing steadily. After this seizure the knee-jerk returned on right side and persisted for several days. He had several epileptiform seizures and grew more demented, and died May 20, 1903, of lobar pneumonia.

Autopsy a few hours after death.

Brain.—Weight 1380. Dura thickened and adherent to calvarium. Substance soft over frontal lobes, which lobes are atrophied, also the parietal lobes. Considerable œdema. Pia thickened over frontal lobes and hazy. Basal arteries atheromatous. Granulations found in 4th ventricle.

Heart.—Vegetations of mitral valve. Calcareous plates in aorta. Coronaries atheromatous.

Microscopical examination of cortex—well-marked typical changes of general paralysis.

Cord.—Shaffer's method for medullated fibers. Cervical region—Lissauer's tract partially degenerated. Posterior root bundles are not degenerated, but some degeneration seen in the entering roots and in lower cervical the root zone is degenerated. There is the typical Y-shaped degeneration in posterior columns and partial degeneration along median line. In thoracic region the posterior roots, root zone, and root bundles show some degeneration and Lissauer's tract is almost completely degenerated. In 12th segment of this region the degeneration of posterior columns takes the typical triangular shape corresponding to 3d fetal system, showing endogenous systems intact. The fibers around cells of Clark's column are not much affected in this case. The entering roots show only partial degeneration, especially in lower lumbar region, and it is significant, as he, at one time, had present knee-jerks after a convulsion. The degeneration may be considered as slight when compared with Cases I and II, and the ataxia is much less marked. In this case the cutaneous sensibility disturbances were slight at first, and later patient became too demented to co-operate.

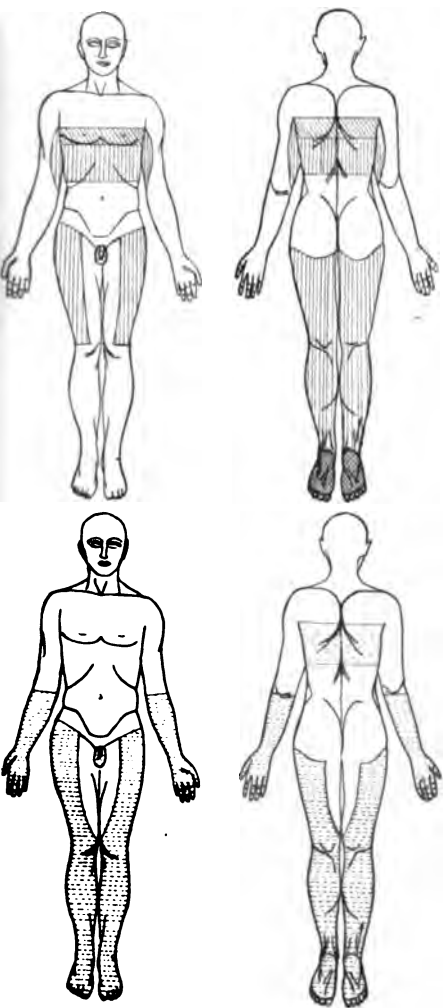
Case IV.—*Tabetic general paralysis, slowly dementing form. Progressing sensibility disturbances. Syphilis. Three years' duration. Autopsy. General paralysis in cortex and slight posterior column degeneration.*

W. A. W. Male. Aet. 41. Married. Marble cutter.

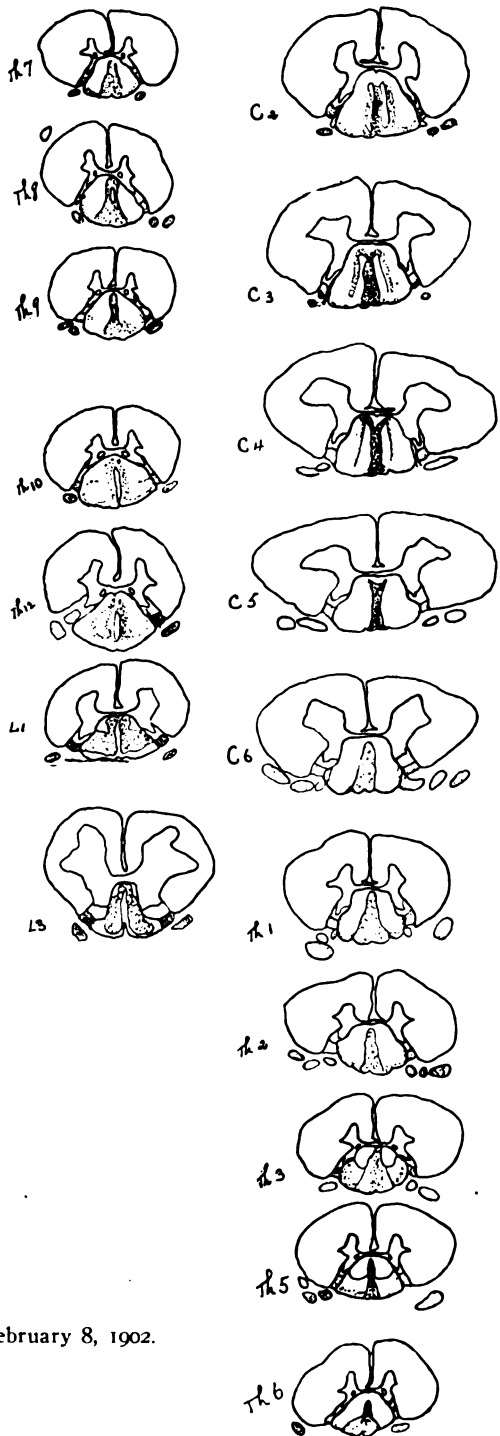
Family history.—No heredity nor neuroses.

Personal history.—He was born and has lived in Cambridge all his life. Early development essentially normal, but he never was very robust. He attended school till the age of 12, and was considered a bright boy. His right eye was injured when a boy, but not seriously. Later he had an abscess of right eyelid, which resulted in ptosis of that lid. He has been a steady marble worker, always earning good pay and supporting his family. He admits syphilis in 1881. He was married in 1887 and his wife has had two children and two miscarriages. He has always been healthy, but never very rugged. He has indulged steadily in alcoholics since æt. 20, and since marriage he has been frequently intoxicated. He had two falls while intoxicated, but none of them were serious.

Onset of the psychosis.—Was gradual during April, 1901. At first it was noticed that he talked a great deal about his work, fabricating about it, exaggerating it, dwelling on details. Then he became trifling, and was discharged May 15, the same year. There was no noticeable impairment of memory at first. He had severe headaches and he became very emotional and irritable. Soon there was a complete change of character. His sleep became impaired and he would spend the night talking about and fooling with his tools. A week before admission he probably had auditory and visual hallucinations (he claimed to hear God talking to him and



Thermanesthesia. Anesthesia.
Partial Thermanesthesia. Analgesia.
Hypalgesia.



NOTE.—Charts made from examination, February 8, 1902.

blessing him, also that he heard and saw angels all about him and heard music). There were no delusions and he was perfectly tractable.

He was admitted to Worcester Insane Hospital, May 20, 1901, and his mental condition was as follows: His general attitude on the ward was quiet, obedient, affable and pleasant to all, and apparently contented. He did not occupy his mind with anything of importance, but remained in his room arranging his effects and in doing insignificant and inconsequential things. He entered freely into conversation, but the trend of his talk was childish and he dwelt on petty topics, into which he would go with much tediousness of detail. There was a general feeling of well-being and contentment and slight exhilaration. He denied any hallucinations, but admitted queer dreams at home. There were no fixed delusions or expansiveness, but some vague ideas of persecution by Italians and Irish, where he worked. He exhibited rather illogical explanations of occurrences and vague misinterpretations. His memory was but slightly impaired and the sensorium was clear, with a good grasp upon his surroundings (even to minute details). He had absolutely no insight into his condition.

PHYSICAL EXAMINATION.—Well nourished and well developed. Complained of sick stomach and headaches at times, also fainting spells.

Eyes.—Slight ptosis of right eyelid. Pupils central and regular, but unequal (right 2 mm., left 4 mm.). Both pupils stationary to light and accommodation.

Hearing, taste, and smell normal.

Reflexes.—Knee-jerks, knee-cap, and elbow and Achilles reflexes absent on both sides. Plantars, cremasterics, and abdominals brisk, wrist-jerks slight.

Motor functions.—Slight facial paralysis on right side. Tongue median with gelatinous tremor. No tremor of the hands. Slight incoordination of foot and hand movements. Muscular twitchings at times on right side of face. *Gait* not very ataxic, but easily loses balance and shows much swaying in Romberg position.

Speech.—No marked slurring, but apt to transpose phrases and words in test sentences.

Writing.—No characteristic tremor, but some elision.

Advanced degree of arterio-sclerosis; otherwise nothing unusual in heart and lungs.

At this time a careful examination failed to reveal any disturbance of *cutaneous sensibilities*.

PROGRESS.—Patient remained in this condition, showing very little change, either mentally or physically. He often complains of sick stomach and persistent frontal headaches. His attitude remained the same, occupied with trifles, and his letters showed the same characteristics. His speech had become more slurring.

Cutaneous sensibilities (September 13, 1901).—*Touch and localization* not impaired except for sole of each foot. *Pain.*—No areas of anæsthesia, but a general dulling of pain sense, as he did not flinch when pricked.

Temperature sense.—No areas of analgesia except in sole of left foot, but a general dulling for *heat*. Patient is able to co-operate well and statements are reliable.

February 8, 1902. *Touch* absent only on soles of both feet. *Pain.*—Girdle of anæsthesia around nipple and posteriorly, also absence of pain in penis and testicles. Diminished pain sense below girdle of anæsthesia to a point half way between umbilicus and xiphoid cartilage, corresponding area posteriorly. Inner side of both arms from elbow to axilla anteriorly and posteriorly. Outer side of thighs anteriorly and whole of lower limbs posteriorly.

Temperature sense diminished, both arms from elbow outward. Penis and testicles, outer sides of thighs, and both legs, also a wide girdle below shoulders.

January 19, 1903. *Pain and touch*, practically the same areas as at last examination except for the lower legs and inner side of arms. Where pain was diminished before, it is present now. Temperature sense only absent on soles of both feet.

Patient remained in about the same condition until April, 1904. Then he became feeble, unable to walk about, and much demented, so he was put to bed. On April 21 he had two general epileptiform convulsions, one lasting one hour and the other three minutes, after which he seemed to fail rapidly. Developed hypostatic pneumonia and died June 23, 1904.

Autopsy ten hours post mortem—Dr. T. A. Hoch.

SUMMARY.—Deep decubitus over sacrum. Old pleuritic adhesions. Moderate degree of hypostatic pneumonia. Beginning arterio-sclerosis. Four pulmonary valve flaps in heart. Brain, weight 1150 grms. Dura adherent to skull cap over vertex. Large amount of cerebro-spinal fluid. Pia fairly thin, somewhat injected, and slightly milky over convexity. Atrophy of individual convolutions. Hemispheres separate readily. Pia tears the cortex when stripped. Cisterna hazy. Vessels of base thin and empty. Well-marked granulations in floor of 4th ventricle.

Cord appears normal to the naked eye.

Microscopical examination.—*Brain.*—Cortex stained by Nissl method shows typical, well-marked advanced changes of general paralysis.

Cord.—Schaffer's method for medullated fibers. Mild type of degeneration. The posterior roots in no segments show complete degeneration. Beginning at C-6 there is seen slight degeneration in all the root bundles. The entering roots and the root zones are slightly degenerated below C-6. Above this the degeneration is confined to Goll's column, except the small tracts of degeneration on the median border of Burdach's column. The endogenous systems are intact, and plexus of fibers in Clark's column are also unaffected. Lissauer's tract shows some slight degeneration throughout, but it is not marked. The degeneration is scattered throughout the exogenous systems. In the lumbar segments the degeneration takes the typical triangular shape as corresponding to the 3d fetal system.

This case, though examined several times for cutaneous sensibility disturbances, did not present very marked disturbances in that field, and that fact is in keeping with the anatomical findings.

Case V.—*Tabetic paralysis in a man at. 40. Paranoic traits. Slow deterioration. Syphilis twenty years before. Disturbance of cutaneous sensibilities slight and constant. Died of empyema. Duration three years. Autopsy refused.*

S. S. Aet. 41. Painter. Married. Male.

Family history.—Not obtained.

Personal history.—Patient was born in Scotland. Nothing known of early history, except what patient gave, that he had a meager education. Came to America in 1886, the year he was married. His wife had one miscarriage and three children, one of which died at æt. 6 of convulsions. He admits having a chancre twenty years ago, and he had a distinct penile scar when examined. He denied any secondary symptoms of syphilis. He worked as a painter.

Onset of psychosis.—According to physician who committed him, his mental trouble came on gradually in 1899, but no definite statements were obtained. He was committed to the Worcester Insane Hospital, July 17, 1901, upon the following certificate: "Is depressed. Patient said for a long time his wife and others were conspiring against him. Has written various letters to his folks charging falsely various people with persecuting him. Changing mood and many fabrications."

At Worcester at first he was quiet and well behaved, cheerful and sociable. Rather sad and serious expression, occupied with reading. At times he was quite exhilarated. He reacted normally to questions and his stream of thought was normal. Orientation was perfect with a good grasp upon surroundings. Memory was but little impaired and intellect was not defective. Mental attitude: Delusions of persecution prominent, but variable and changing. At first he claimed the medical profession and hospitals had neglected his wife. Later he claimed that his wife and others had formed a plot to send him there and get his property. Marked self-abstraction. Absolutely no insight into his condition.

PHYSICAL EXAMINATION, JULY 18, 1901.

A well-developed and well-nourished man. Silver gray hair and moustache. No subjective sensations. General feeling of well-being.

Eyes.—Muscular movements normal. Pupils unequal (left 2.5 mm., right 2 mm.). Left pupil reacts sluggishly to light, the right just a trifle. Consensual reaction slight. Both react to accommodation. Vision impaired, especially in right eye.

Cutaneous sensibilities.—Unimpaired.

Reflexes.—Knee-jerks, knee-cap, Achilles absent on both sides. Elbow and forearm reflexes equally diminished on both sides. Plantars normal. Cremasteric diminished on right, not obtained in left.

Motor functions.—No facial paralysis. Gelatinous tremor of tongue. Coarse tremor of fingers. Slight incoordination of foot and hand movements. Gait not impaired. No swaying in Romberg.

Writing.—Slight tremor.

Speech.—No defect noticed.

Lungs.—Negative.

Moderate degree of arterio-sclerosis. Superficial varicose veins in both legs.

Heart.—Somewhat enlarged. Slight arrhythmia, but no murmurs.

Sexual organs.—Prepuce greatly thickened. Distinct scar on dorsal surface of glands, and he admits chancre. Urine showed a trace of albumin and a few hyalin and granular casts.

PROGRESS.—Patient remained about the same, at times denying delusions of persecution formerly expressed. He wrote a good many letters, trying to explain his position, and trying to get released. His wife died soon after his commitment and he was only slightly affected. He was usually quiet and good natured, but occasionally became irritable and abusive to attendants. He exhibited a slow deterioration, but was usually quite industrious.

PHYSICAL EXAMINATION, March 2, 1902, showed persistent absence of knee-jerks and Achilles. Pupils contracted and usually equal. No reaction to light, slight to accommodation. Tremor of tongue and fingers more marked, also of lips and more marked in writing. Speech showed more slurring and thickness.

Cutaneous sensibilities.—Touch not impaired except for genitalia. Pain absent on soles of feet, much diminished over chest, a band including both nipples and extending across back. Temperature sense slightly diminished over most of body and absent on soles of feet. No other areas found in subsequent examinations.

August 2, 1902. He had become quite weak and shaky and it was necessary to put him to bed. His heart was weak and rapid and respiration increased and labored. Examination of chest revealed a serous pleurisy with effusion on left side. Shortly after chest was aspirated and 1800 cc. of fluid withdrawn. He had been coughing some, raising bloody mucus. It was necessary to aspirate chest several times, but to no avail, as a few days later a distinctly foul-smelling fluid, pale wine color, was drawn off with considerable pus.

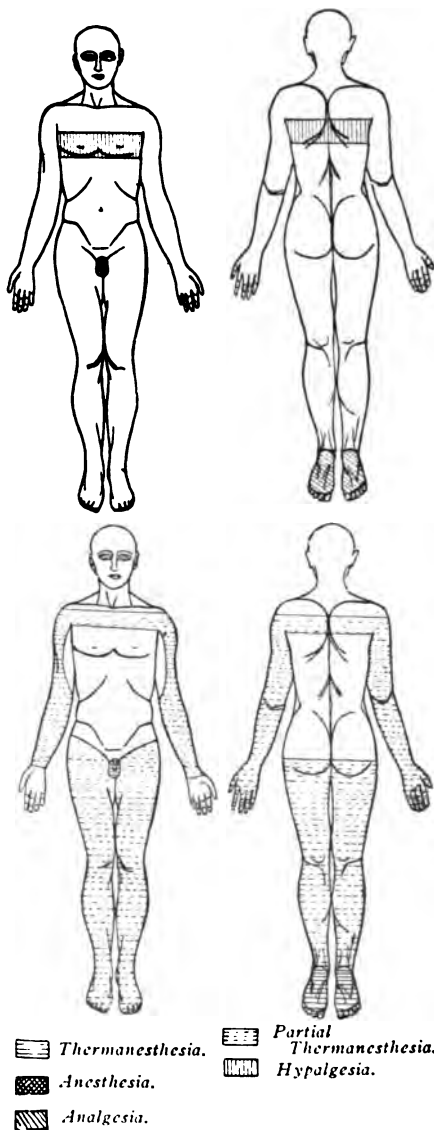
He died September 12, 1902, of empyema. Autopsy refused.

Case VI.—*Tabetic paralysis. Syphilis ten years previous. Depressed type. Suicidal. Atypical course—three years' remission. Tabetic symptoms well marked. No convulsions. Vesical paralysis. Death from cardiac failure. Autopsy. Typical changes of general paralysis in cortex. Cord—posterior column degeneration.*

A. V. B. Aet. 33. Single. Reporter. Male.

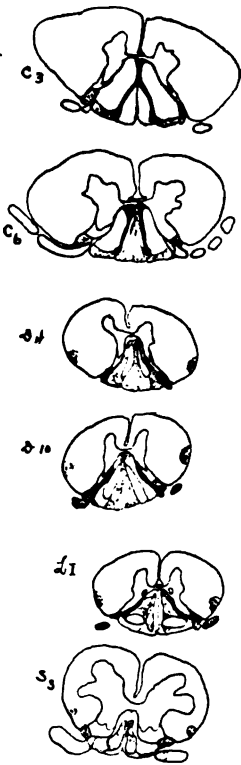
Family history reveals consumption on paternal side of family, but no insanity.

Personal history.—Patient was an only child. Born in Massachusetts, 1869. Early development normal, with a history of one convulsion at 18 months, due to treatment given by mother. He was a very bright scholar and entered high school at 11, leaving on account of father's death to work in round-house, later in mills and at odd jobs. From 17 to 25 in bakery business, and drank heavily, thirteen or fourteen whiskies a day; then as



NOTE.—Charts made from examination, March 2, 1902.

Case V.



reporter for eighteen months; then went in the bakery business again; only occasional glass of beer. Masturbation admitted in early life and excessive sexual intercourse since 20. He had five gonorrheas, and in 1892 contracted syphilis, and in 1894 was ill and broken up over a love affair. Soon had boring pains in legs and since January, 1893, bad dreams. In July, 1897, got out of work and failed physically. Became quite depressed on account of financial difficulties. During September and October at times was quite depressed, and at others pleasant, though usually worse in the morning. October 18, 1897, saw a vision of himself jumping in the river, and that haunted and overpowered him so that he threw himself off the Bloomingdale bridge. Sudden impulse, though he admitted that he went out for that purpose. He was taken to City Hospital with Colles fracture. He continued to have bad nights and frequently cried and hated to see people. Early in June, 1898, lost his position because of slack work, and became discouraged and depressed, but before this was blithe and lively. August 6, felt very bad and did not eat; thought something was going to happen and cut throat with a razor and nearly succeeded in suiciding. Good recovery from City Hospital, and committed to Worcester Insane Hospital, August 17, 1898, as having suicidal impulses over which he had no control.

Physical condition on admission.—Pallid complexion. Left pupil reacts less to light than right. Knee-jerks absent. Slight tremor of hands at rest. Oxaluria. No Romberg. Gelatinous tremor of tongue.

Mental status, September 13, 1898. Quite anæmic. Bright facial expression and affable manner. Perfect orientation. No defect of intellect or memory. Knew perfectly well what he was doing when he jumped off bridge and cut himself. Explained these attempts at suicide on ground of having horrible thoughts, urging him to do so. Explanations sound like excuses. Talked to other patients as a student of the occult; slips into another personality at night and does things foreign to his nature. No speech defect or defect in writing. Able to carry on an intelligent conversation. No delusions or hallucinations elicited. Emotional sphere harmonious. He continued quiet and affable, a good worker in the dining room, and occupied with playing cards and reading. He had dreams which affected him during the day. By March, 1899, he had fair insight into his condition. At times had suicidal impulses and asked to be sent to observation ward. The knee-jerks continued absent and other physical signs the same. Escaped on September 16, 1898, and a few days later discharged as "Improved" at request of mother.

He seemed perfectly well at home. Worked a year and a half in the biscuit factory. Change of gait noticed at this time with numbness of feet. Work considered too hard and he left and has had no steady work since. Reported for local papers and worked at odd jobs. Unable to keep places because he became too confused and was not reliable. Feet became painful and swollen. During summer of 1902, worried and depressed over condition. Writing became tremulous. Suffered from indigestion, lost weight, exhilarating dreams and insomnia. Later peculiar ideas of compulsion. Thought State Mutual Building had a fascination for him and wanted to

jump off, and he feared that he would commit suicide. Recently failing memory is marked. Again committed to Worcester Insane Hospital for safety, December 19, 1902, because suicidal impulse became stronger.

On admission he was quiet and complained of feeling weak and run down, so he was placed in bed. He was very neurasthenic. Answered questions promptly and pertinently and presented a fairly normal attitude. After a few days in bed he was allowed to be up and dressed. He spoke freely of his condition and showed almost a slight exhilaration at times, became too hopeful. Occupied his time reading and working and took a great interest in his surroundings. *Orientation* was perfect and grasp upon surroundings perfect. *Memory* for recent events somewhat defective with a tendency to confuse dates and events; this he recognized. *Memory* for remote impressions good, no discrepancy of dates. *Intellect* shows some deterioration, and calculating ability defective. Unable to concentrate his attention.

Mental attitude showed a normal stream of thought. Subjective sensations of weakness and gastric disturbances. Compulsive ideas of fear of suicide. Insight fair into present and good for previous condition.

PHYSICAL EXAMINATION, DECEMBER 23, 1902.

About the same general condition as before. Complaints of tiring easily and of lightning pains in legs at times. Stomach out of order.

Pupils.—Right 4 mm., left 3 mm., central and regular. Right reacts slightly, left not at all to light, slight to accommodation, some to sympathetic stimulation.

Cutaneous sensibilities.—Touch and localization not impaired. Pain sense much diminished in band over both nipples, and absent on soles of feet. Temperature sense not diminished.

Reflexes.—Knee-jerks, knee-cap reflex, and Achilles absent on both sides after repeated attempts. Cremasteric absent on left, brisk on right. Abdominal, elbow, and forearm reflexes brisk. Plantars normal.

Motor functions.—Considerable fibrillary tremor of tongue, also of lips and hands. No paralysis. Slight incoordination of foot and hand movements. Gait unsteady; loses balance in turning corners. Swaying in Romberg. Speech shows considerable defect, slurring and hesitating in test sentences.

Radials and brachials thickened and tortuous, also temporal. No heart murmurs. No penile scar. Admitted syphilis. Writing showed no defect.

He improved somewhat, but at times complained of lightning pains in legs. There was no marked change till February 21, 1903, then he became upset by visit of mother and friends, cried during the visit and was much depressed, claimed the suicidal impulse was coming back. At night he was restless and tried doors to get out of the ward. On the morning of February 23d he was found standing in his room, staring blankly ahead, and paid no attention to questions. Easily moved about the room, but attention remained unattracted. Given a pencil and pad, took them slowly, but unable to write his name, appeared not to know their use. Arm remained in semi-flexed condition when pad was taken away and a few minutes later

arm dropped to his side. Put to bed and remained in same stuporous condition. Hands had to be restrained to prevent masturbation. He talked more, but only in a vague manner, and was unable to explain actions of the morning. He remained in bed, stupid and irresponsive. At times answered after much urging. Peculiar poses and mannerisms. Knee-jerks and Achilles persistently absent.

Cutaneous sensibilities.—Touch not determined. Does not attempt to localize. Pain apparently absent everywhere except over abdomen.

Pupils.—Right 4 mm., left 3 mm. No reaction to light.

Gelatinous tremor of tongue and lips. Marked speech defect. He claimed he had no stomach and refused food. Later became more talkative. Oriented for place, but not for time. Marked memory defect and no insight into episode. Claimed he saw snakes in bed and reacted to the same during the night. In mild delirium and confused. Subjective sensations: burning in back, and he called it fire. Developed fabrications based upon subjective sensations. Claimed some one shot him and shows physicians his chest with bullets in it. Still thought rattlesnakes were in bed with him. By March 4 he was brighter and answered questions pertinently, but with some hesitation. Claimed he had been poisoned. In a few days later, however, he was stupid and irresponsive as before and had vesical paralysis, necessitating catheterization for some days and which improved under urotropin and washing with boric acid. His condition became variable. At times talked freely and seemed brighter, but soon lapsed again into his old condition of stupor and restlessness with mutism and resistiveness.

On April 27 patient got out of restraint twice and attempted suicide both times. Amnesia for these attacks. During May he was stupid and at times noisy and excited. He died suddenly, June 5, 1903. Cardiac failure.

Autopsy four hours post mortem—Dr. T. A. Hoch.

Brain.—Weight 1260. Soft. Pia of convexity, slightly thickened and hazy. Vessels of pia injected and milky lines follow vessels. Slight oedema, atrophy of convolutions. Basal vessels atheromatous. Granulations seen in floor of 4th ventricle.

Heart.—Thickening of mitral ring.

Cord.—Clot on ventral surface of 4th and 5th cervical segments.

Microscopical examination.—*Brain.*—Cortex in frontal and parietal regions shows well-marked changes of general paralysis.

Cord.—Shaffer's method for medullated fibers. *In cervical region* only two narrow tracts of degeneration are seen, meeting in the ventral portion and branching out in V-shape, and Lissauer's tract has some degenerated fibers. Root zones and roots are free. *In thoracic region* the posterior root zones and entering roots show degeneration, also posterior root bundles are degenerated with some degeneration in lateral tract. The posterior columns show moderate degeneration, but some healthy fibers are seen. Lissauer's tract is only partially degenerated. Fibers around Clark's column show but little degeneration. *In lumbar region* posterior roots, root zones, and root bundles show marked degeneration and fibers around Clark's column moderately degenerated. The septo-marginal zone and ventral

posterior zone are free from degeneration. Lateral columns are also degenerated, but only slightly in thoracic, lumbar, and sacral segments.

Sacral segments.—The posterior roots, root zones, and root bundles show very little degeneration, but partially degenerated posterior columns with septo-marginal tracts and ventral posterior zone free. Lissauer's tract shows some degeneration.

Case VII.—*Tabetic paralysis in a man at. 66. Syphilis not established. Demented type. Tabetic symptoms slight. Duration two years. Convulsions. Death and autopsy. Typical general paralytic changes in cortex. Posterior column degenerated in cord.*

C. W. McL. Aet. 66. Married. No occupation. Male.

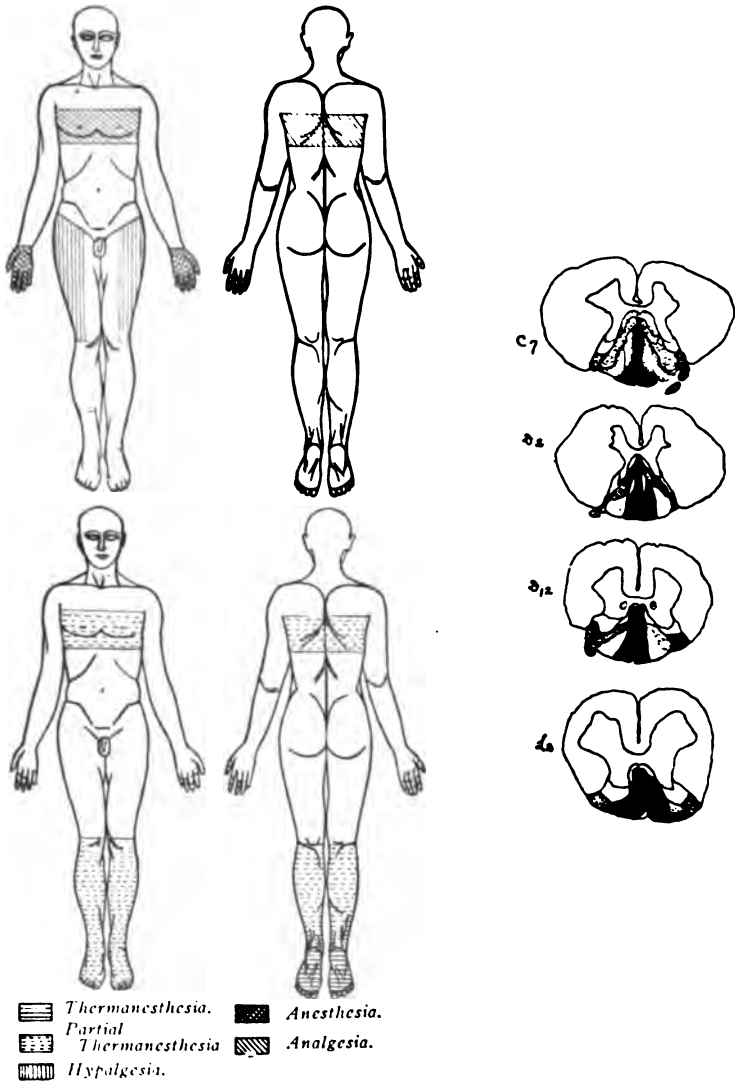
Family history reveals no heredity.

Personal history.—Early development normal as far as known. Married aet. 25 and wife has had no children. Patient admits gonorrhea, but denies syphilis. Patient was a successful road-house keeper and always supported wife. Marked alcoholic excesses for past 27 years, and he was frequently drunk. Nothing further could be learned, as patient is too demented to give any account of his life.

Onset of the psychosis.—Gradual about April 1, 1901. He suddenly left work to go to another town. He was fifteen hours going a distance of six miles, and he failed to recognize members of his own family. He went back to work, but was only able to work for his board, as he was incapable of remembering things and unable to perform work he had done formerly. He would sit by himself all day and seemed very stupid. He did not know what he was doing and could hardly recognize anyone. He would wander away and get lost frequently. On June 14 he picked up his clothes, put them in a bundle and walked out, going about three miles. He acted peculiarly on the road, dodging everyone, and claimed some one had killed his wife. He was later found on a lumber pile in a most dejected attitude and asked for some poison to kill himself. He was taken to the Poor Farm and committed to the Worcester Insane Hospital, June 15, 1901.

On admission he was found to be completely disoriented and lost as to his surroundings. He was quiet and orderly, but unable to find his way about the ward. He was quite contented and usually had a smiling, simple facial expression. On June 29 he was struck by another patient and was put to bed, where he remained because of general weakness. He answered questions promptly and pertinently, but often gave silly and unintelligent replies, showing an utter lack of appreciation of his surroundings. The stream of thought was interrupted and wandering, often of a childish, inconsequential trend. There was slight exhilaration and expansiveness. No marked delusions or hallucinations elicited. Marked deterioration of intellect and memory, the lapse in memory being filled with fabrications and reiterations of the past. Unable to retain things in his memory. Completely disoriented for time, place, and persons. Some little insight into his loss of memory, but none into true mental condition. He remained in above condition for some time.





NOTE.—Charts made from examination, December 9, 1902.

PHYSICAL EXAMINATION.—An old, feeble, fairly nourished American with gray hair and moustache and general senile aspect. General feeling of well-being and exhilaration and no subjective sensations. No pain over nerve trunks or muscles.

Eyes.—Beginning arcus senilis. Pupils unequal and much contracted. Left $3\frac{1}{2}$ mm., right 2 mm., and irregular. Both central. Right pupil shows no appreciable reaction to light and only slight to accommodation. Left pupil reacts sluggishly to same.

Vision.—Poor, but no hemianopsia.

Cutaneous sensibilities.—Normal as far as ascertained, as patient was too demented to co-operate and quite deaf. Unable to hear watch tick unless held close to ear. Taste and smell somewhat impaired, but difficult to ascertain.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent on both sides. No ankle clonus. Plantars and abdominal reflexes normal. Cremasteric normal. Elbow and forearm reflexes normal.

Motor functions.—Coarse tremor of tongue and hands. Slight inco-ordination of foot and hand movements. Gait very unsteady, feeble and tottering, losing balance easily. Some swaying in Romberg.

Speech.—Shows characteristic slurring in test sentences and in ordinary conversation.

Writing.—Very poor and had some tremor.

Lungs.—Negative.

Radials and brachials tortuous and thickened. Temporals stand out hard. Heart not enlarged and no murmurs can be detected.

Sexual organs are normal and no scar visible. Patient claimed he had been impotent for a good many years. Admitted one gonorrhea, but denied syphilis. Statements not reliable.

Urine negative.

There was very little change in patient's condition. He remained in bed, growing more demented, and did not know his own wife. He would scratch his legs, claiming they were not his, but made no suicidal attempts. There was no change in reflexes or reaction of eyes, except that the pupils became smaller ($1\frac{1}{2}$ -2 mm.) and less reaction to light till February, 1903, when it is recorded: "Pupils pin-point in size and no reaction to light." He became much demented and filthy in habits. He became worse about the 7th of March, 1903, and on the 9th he had a slight epileptiform seizure, but no paralysis. He died later in the day of hypostatic pneumonia.

Autopsy 11 hours after death.

The summary of the findings was general arterio-sclerosis and atheroma of aorta. Mitral and aortic valves thickened. Hypostatic pneumonia.

Brain.—Weight 1290 grms. Dura strongly adherent to skull-cap. Substance fairly firm, except over frontal poles, which are soft. Pia everywhere hazy. Milky white lines along course of vessels and deeply injected, more so on right, and whole vertex being very oedematous. Considerable asymmetry of convolutions on either side, more marked over vertex. The

convolution of frontal region flat and atrophic, extending back to percentral fissure. Sulci shallow and narrow. Basal vessels distended and stand open. Cisterna hazy. Temporals adherent and cannot be raised without considerable tearing. Granulations made out in 4th ventricle.

Cord showed very little macroscopically except a thickening of the pia.

Microscopical examination.—Cortex shows typical changes of general paralysis.

Cord.—Weigert Pal method.

Sections studied, 7th cervical, 2d and 11th thoracic, 2d lumbar. The posterior roots are partially degenerated in 7th cervical, completely degenerated in the thoracic 2d, partially in the thoracic 11th; 2d lumbar they are completely degenerated. Lissauer's tract is degenerated in all segments.

The *exogenous system* degeneration does not differ from that found in Cases I and II, and is more marked than is seen in cases of this group. The fiber plexus in Clark's column is but little affected in the 2d thoracic, but lower down there is considerable degeneration. The *endogenous systems* are slightly degenerated and this case shows marked ataxia.

Case VIII.—*General paralysis preceded by tabes for two years. Primary optic atrophy both eyes. Cutaneous sensibilities involved slightly. Demented form. Syphilis not excluded. Lightning pains in legs. Duration 3¼ years. Died of heart failure. Autopsy. Characteristic changes of general paralysis in brain. Posterior column degeneration in cord.*

J. M. M. Aet. 50. Single. Janitor. Male.

Family history negative as far as known.

Personal history.—Born in Boston. Very little known of early life, as no one came to give competent history. Worked as a carpenter till 1894 and since then he had been a janitor and secretary for some Odd Fellow's lodge. Considered a steady worker and earned good pay. No alcoholism, but smoked excessively. No statements as to venereal disease could be obtained (as he was too demented to answer satisfactorily), but syphilis was denied. He was a bright, pleasant man and considered moral by friends. He never had any serious illness or traumatism and not till 1898 did he notice anything wrong. Then he lost the sense of smell (could not detect skunk). In 1900 *locomotor ataxia* developed and he had great difficulty in walking and was unable to ride his bicycle. This condition progressed gradually till he could hardly stand. He consulted a physician and systematic exercise benefitted him very much. In 1901 his eyesight began to fail, the right was affected first, then the left.

Onset of the psychosis.—Nothing peculiar was noticed about patient till January, 1902, when gradually his friends noticed a change of character and commented upon the fact that his mind was failing. He did not realize the seriousness of his trouble and thought he would soon be well. He was very talkative and showed a general feeling of well-being. Gradually it was noticed that his memory was failing, especially for recent impressions. His sight had become so that he could not see anything but light and was not able to walk without assistance. On December 1, 1902, he was much

upset over some lodge affairs and after that his condition became much worse. He talked to himself a good deal and pleaded with imaginary people. Suddenly, December 3, he became much excited, shaking and trembling all over. He begged his landlady to kill him and they could do nothing with him. He attempted to get his razor. After some difficulty he was subdued and sent to Deer Island and from there he was committed to the Worcester Insane Hospital, December 8, 1902.

On admission he was much excited and very talkative. He was rambling and flighty in his talk and told of his grievances in a disconnected manner. Although blind, he insisted that he saw quite well and was in good physical health. He slept very little and it was necessary to put him in restraint at night. The day after admission he was quieter. Claimed he could see when he came there, but he had been made blind. When questioned he answered promptly and pertinently, and showed much prolixity and a tendency to repetition. He was emotional at times, but mood would change suddenly. It was necessary to keep him in bed, as he could walk only with difficulty and was totally blind. Orientation was fair for place and persons, but not for time. He had a fair grasp upon his surroundings. His memory for recent events was much impaired. He showed an inability to retain impressions, while for remote events it was good except for exact dates, and here he showed characteristic discrepancies. General intellect showed much deterioration and he had no real insight into his condition. He had many neurasthenic ideas, often absurd, such as he was dead and could not move. At times emotional, irritable, and violent. At times attempts at self-injury and shamming. No prominent delusions elicited, but at times was somewhat expansive in his fabrications.

PHYSICAL EXAMINATION, DECEMBER 9, 1902.

Well-developed American. Numerous pigmented depressed scars under both scapulæ. Bruises and pigmented areas over both tibia, which are roughened. No enlarged glands, but two granular subcutaneous masses found on left forearm and left thigh. He complained of previous pains in legs, lightning in character, and of numb feelings in fingers and toes. At times girdle sensation around chest and dizzy feeling in head.

Eyes.—Slight nystagmus in horizontal planes. Movements of right limited in looking to extreme left. Both eyes converge when looking upward. Marked suffusion of conjunctiva in left eye. Pupils unequal (right 6 mm., left 5 mm.), central and regular. Immobile to light, accommodation, and sympathetic stimulation. Vision completely lost in right, only distinguishes light in left eye.

Ophthalmoscopic examination.—Discs of both eyes show a pearly grey color and are cupped out. The vessels are large and dip over ring. Primary optic atrophy of both discs.

Smell impaired and had been for several years.

Taste unimpaired.

Cutaneous sensibilities.—Touch and localization everywhere normal, except palms of both hands. Pain sense absent in a girdle over chest, above and below nipple, also extending over back. Diminished pain on outer side

of thighs. Temperature sense diminished over body and legs, and absent on soles of feet. (Did not co-operate very well.)

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars normal. Cremasteric brisk on left, sluggish on right. Elbow and forearm reflexes sluggish.

Motor functions.—Tremor of tongue and hands, especially of right hand. Some twitching of right arm. At times muscular power of extremities not impaired. Slight incoordination of hand movements, but more marked in legs. Gait very ataxic and unsteady. Marked swaying in Romberg position. Unable to stand on one foot. Speech showed marked defect in test sentences.

Heart and vessels.—Considerable degree of arterio-sclerosis. No dilatation and no murmurs. No penile scar and syphilis denied. Admits gonorrhea three times.

Urine negative.

PROGRESS.—Patient became gradually more demented. At times he was much depressed and suicidal and was always irritable, excited, and noisy most of the time. Many absurd somatic ideas—lost all his teeth and mouth sewed up. Many expansive ideas, alternating with hypochondriacal ideas, both forms very absurd. He was constantly in restraint because of restlessness and sudden violent impulses. The physical condition did not change. The knee-jerks were persistently absent and the cutaneous sensibilities were the same upon frequent examination, though he did not co-operate very well. He became dull and stupid and showed symptoms of heart failure.

Died March 10, 1903, of heart failure.

Autopsy 2¼ hours after death.

The anatomical summary was as follows:

Heart flabby and considerably enlarged. Considerable thickening of mitral valves. Aortic valves and beginning aorta much thickening, also coronaries. Other organs not especially abnormal.

Brain.—Weight 1440. Considerable pial oedema over frontal and parietal regions and 140 cc. cerebro-spinal fluid withdrawn by lumbar puncture. Dura slightly adherent over frontal and occipital regions. Pial vessels deeply injected. Pia hazy over vertex and milky line follows course of vessels. Frontal lobes adherent just above corpus callosum. Convolutions fairly firm. Temporal lobes separated from frontal with great difficulty. Pia thickened along Sylvian fissure. Basal vessels slightly thickened. Cisterna thickened and hazy. Distinct granulations in 4th ventricle.

Cord.—Dura adherent and pia injected. Posterior column of cord in all regions shows a macroscopic change, but it is more marked in lumbar region and less in cervical. The posterior columns are pearly gray and translucent.

Microscopical examination of brain.—General paralysis changes present, but not far advanced.

Cord.—Weigert Pal method.

Sections examined, 7th cervical, 2d and 12th thoracic, 2d lumbar.

Posterior roots partially degenerated in the 7th cervical and 2d thoracic, but totally degenerated in the other segments examined. Lissauer's tract shows considerable degeneration throughout. The degeneration of fiber plexus in Clark's column is well marked. The ventral posterior zone is but little affected, but other endogenous systems show some degeneration, especially in the comma tract. Thoracic 2d and 12th, the degeneration is more marked on one side than on the other. This case represents well-advanced tabetic process with marked ataxia. The exogenous systems are markedly degenerated.

Case IX.—*Tabetic paralysis. Syphilis probable. Headaches and shock at onset. Convulsions. Delusions of persecution. Later transitory shock affecting right side and transitory aphasia. Cutaneous sensibilities slight. Marked ataxia. Improvement and escape.*

A. A. B. Married. Aet. 31. Electrician. Male.

Family history.—Mother insane 18 years ago. Grandfather alcoholic. Otherwise negative.

Personal history.—Patient was born in Maine, 1872, and his early development was essentially normal. He attended school, but did not care much about studying. He took up electrical engineering and was fairly successful. Patient was married aet. 23 and his wife has had four children. Patient admits one gonorrhea in 1895 and claims later to have taken K. I. for a good many months. The examining physician gave tertiary syphilis as the cause of trouble. Patient had always been pleasant and sociable and was considered a moderate drinker for eight years. Occasionally he would get drunk.

Onset of the psychosis.—Gradual since October 1, 1902. Patient began to complain of frequent frontal headaches, which were quite severe, and he has suffered from constipation. He got along all right with his work until recently. About January 20, patient complained of right leg being numb and about noon he claimed that right side was completely paralyzed and he could not talk for some time. He was able to walk with assistance. However, he was unable to work and went to bed off and on until he was committed. He complained of an electric motor at the base of the brain and talked about being a negative wire. He became easily annoyed when he had the headaches and anything like dogs barking would make him furious, and he scared his wife. He would lose control of himself entirely. He had a good appetite, but his sleep was interfered with by these headaches. He became violent and was considered dangerous, so he was committed to the Worcester Insane Hospital, January 29, 1903.

On admission he was quiet and orderly and complained of neuralgia on left side of face, numbness of right side of body and tongue, and had been so for a week. He thought some powders he had taken for headache had poisoned him. His gait was slow and uncertain and Achilles and knee-jerks were found to be absent and pupils dilated.

PHYSICAL EXAMINATION, JANUARY 30, 1903.

A well-developed, well-nourished man, somewhat anæmic. Some en-

larged glands found in groin. Complained of persistent headache of left side of head for two weeks, worse at night. Numbness of entire right leg and pricking sensation at times and same sensations of right arm, hand and face and tongue. These sensations gradually left the arm, but still in leg, also a little dizziness at these times. No pain over nerve trunks.

Eyes.—Slight nystagmus in extreme right and left lateral plane. Pupils central, left regular, right somewhat irregular, on inner quadrant, unequal (right 5 mm., left $6\frac{1}{2}$ mm.). Fairly prompt reaction to light, but within very narrow limits. Prompt to accommodation, slight to sympathetic stimulation. Vision not impaired. No hemianopsia or diplopia. Hearing and taste normal. Smell slightly impaired on left.

Cutaneous sensibilities.—No anæsthesia to touch, but slightly diminished on bottom of left foot. Pain sense normal everywhere. Temperature sense slightly diminished on soles of both feet, more so on right.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars, slight flexion on right. Brisk extension of big toe on left. Cremasteric slight on left, brisk in right. Abdominal brisk. Elbow and forearm reflexes brisk. Organic reflexes normal.

Motor functions.—Fibrillary tremor of tongue and slight tremor of hands on rotation. Grasp fair, a trifle weaker on the right. Muscular power of extremities not impaired. Some incoordination of foot and hand movements, more marked on right. Gait considerably ataxic and unsteady. In Romberg position patient falls backward each time. Writing shows slight defect and tremor. Speech—some defect noticed in test sentences.

Lungs.—Negative. Brachials thickened, but not tortuous. Temporals tortuous. Pulse fast and regular, 114 standing. Heart negative.

Abdomen negative. Patient admits gonorrhea seven years ago, denied syphilis, but admitted taking K. I. for a long time. No scar on penis.

Urine.—Negative.

Patient remained quiet and orderly, answering questions intelligently and complaining of headaches on left side of head. He was agreeable and sociable, playing cards and reading, showing a nearly normal reaction. He was given sat. solution K. I. and mercurial inunctions, which seemed to benefit him, also migraine tablets for headache. Mentally he seemed quite clear. Was well orientated for time, place, and persons, and showed a good grasp upon his surroundings. There was no defect of memory or intellect, but he had no insight into his condition, either at home or at the hospital. He expressed no delusions, but claimed he heard dogs barking and people made noises upstairs that annoyed him. He claimed he had received an electric shock that caused the shock on right side of body. He remained practically the same, showing some improvement in physical condition until February 20, when he had a shock during the night, but it was transitory and only affected the right side slightly. At first when seen he could not talk, but understood all that was said to him. Later, when seen by physician, he could talk with great difficulty and could only walk with help.

Reflexes.—Knee-jerks, Achilles, and knee-cap reflexes continue absent

on both sides. Plantars: Flexion of small toes and slight extension of big toe, but flexion is soon exhausted. Cremasteric and abdominal absent on right, brisk on left. Elbow reflexes absent and forearm reflexes slight.

Eyes.—Pupils unequal (right $4\frac{1}{2}$ mm., left 6 mm.). Both react fairly prompt to light, but within narrow limits, and soon expand even with brilliant light shining on them. Muscular movements unaffected.

Vision.—No hemianopsia, but slight degree of diplopia in looking to left and downward.

Cutaneous sensibilities.—Touch and localization not impaired, though at times unable to tell direction of stroking in right nipple area. Pain sense not lost anywhere, though somewhat diminished over nipples, where he does not flinch and cannot differentiate pencil and needle prick. Temperature sense not impaired.

Motor functions.—Slight right facial paralysis. Tongue median with very little tremor. Marked incoordination of foot and hand movements. Grasp good on left, weak on right, also decrease of power in right leg. Sense of position not lost. Stereognostic sense intact.

Gait.—Unsteady and staggering, especially weak on right side. Much swaying in Romberg.

Speech.—Marked defect, thick and stumbling, and much hesitation in pronouncing. Very slight degree of aphasia of paraphasic type. He complained of numbness of right leg and bottom of foot, and severe headaches on left side since last night. He was stupid and confused, but oriented.

February 21. This morning patient was found completely paralyzed on right side (arms, legs, and face), though tongue is median, unable to eat or chew as food runs out of mouth. He was hardly able to talk, but no true aphasia. Unable to walk and very emotional.

Physical.—Knee-jerks, Achilles, and knee-cap reflexes absent. Plantars: brisk Babinsky on right and some extension on left. Cremasteric brisk on left, slight on right. Abdominal brisk on left, absent on right. Right leg can be slightly extended.

Hearing is somewhat impaired. Pupils show no change. Vision unimpaired. No diplopia.

Cutaneous sensibilities unimpaired upon repeated examinations.

Patient remained about the same for four days, when he began to improve and some power returned to right side. Cutaneous sensibilities tested every day and no impairment found. At times he complained of numbness in ring and little finger, and extending up arm. His bladder was not affected, but bowels moved only by enema. Speech improved gradually.

He improved slowly, till the 2d of March, when he apparently had another slight shock. He became weak, had headache on left, and was unable to move right side. Facial paralysis was more marked and he had great difficulty in talking.

March 6. Found in deep sleep from which he could not be aroused. Very stupid. Breath offensive. Reflexes the same. Babinsky on right. The next day he developed fever of 102° and was more stupid and sleepy, and complained of some sore throat.

From this time he gradually improved, both mentally and physically. Pupils continued left larger than right. Sluggish reaction. Cutaneous sensibilities at no time impaired. Slight residuals of right hemiplegia, but power gradually returning. He became quite clear, but memory somewhat deteriorated. He frequently become emotional and irritable, fabricating about the medicine and making trouble. By April 4 he was up and dressed and able to walk, though slight residuals. At times complained of numbness of right leg and that it was more sensitive to pin pricks than left. He had a few ideas that his wife was not treating him exactly right, and he had a very exalted opinion of his own powers and ability, trying to play tennis and writing for positions.

Later patient escaped.

A letter from his wife, dated July 30, 1904, in answer to an inquiry, stated that he "seemed like his old self," and was doing the same work he did before the onset of his trouble, but had some difficulty in walking up and down stairs, also that his mind seemed as active as it ever was.

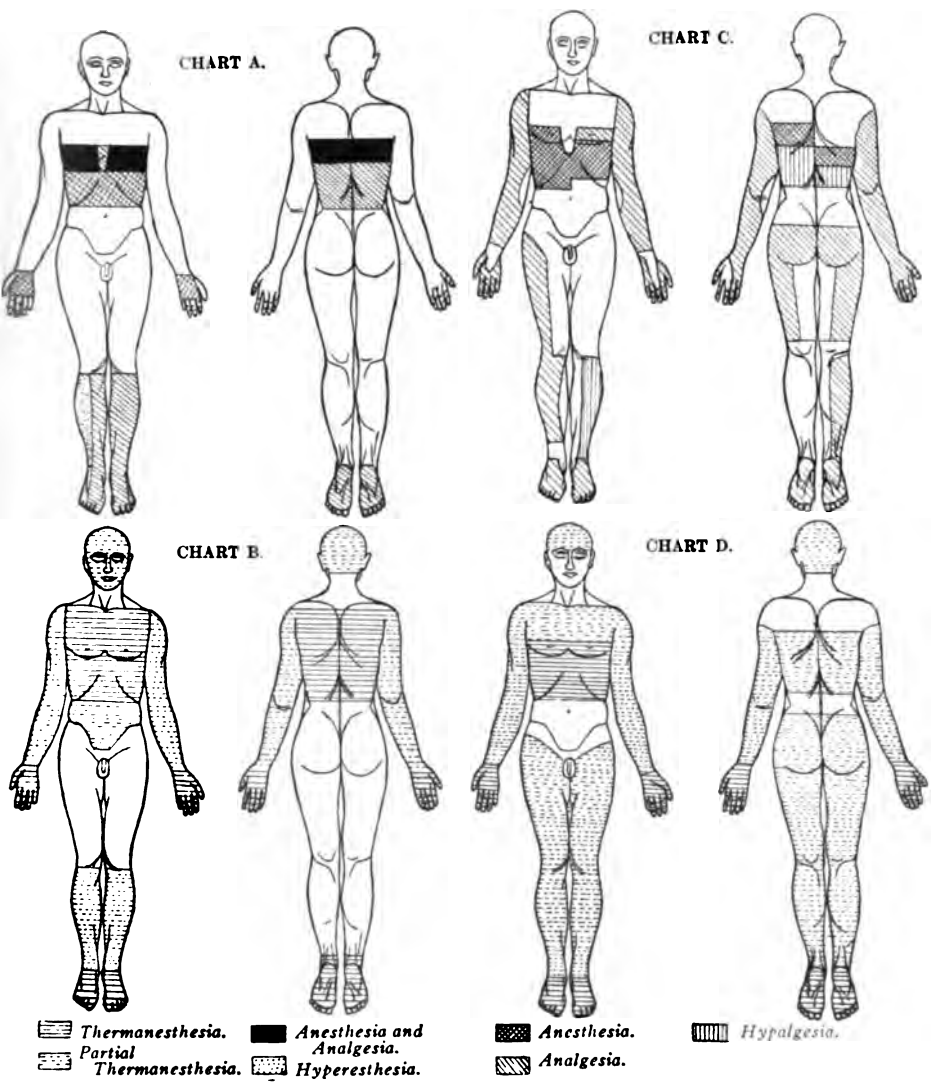
Case X.—*Tabetic paralysis. Atypical course. Long duration. Marked remission. Syphilis. Lightning pains. Peculiar mental symptoms. Slight deterioration. Variable sensory disturbances.*

R. M. Aet. 39. Married. Teacher. Male.

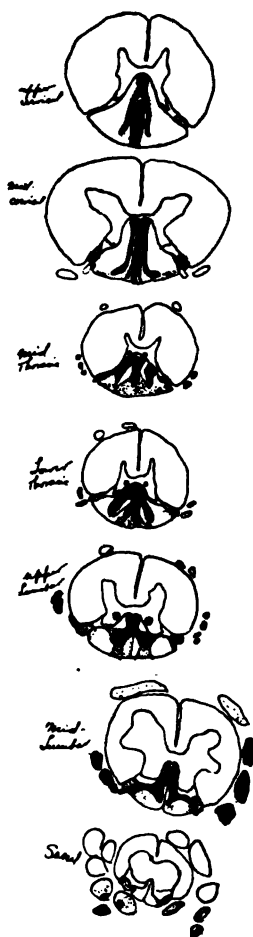
Family history reveals marked heredity. Father, sister, cousin, and niece insane, but form unknown. Early development normal. Good education. Taught school for three years, then studied for ministry. Syphilis at æt. 18. Married æt. 27. Wife had four children and three miscarriages. He never drank to excess. In 1890, psychosis apparently began with irritability, unhappy married life, frequent quarrels. In 1896, further irritability and violence to wife with increased interest in religious matters. In 1897 he left his home and was arrested for non-support, and returned to wife, but was violent. March, 1898, separation began. November, 1898, homicidal acts, excited, swearing, yelling, and talking religion. Committed to Worcester Insane Hospital, November 5, 1898.

On admission in restraint, yelling, spitting at attendants. He was disoriented, called patient "Jesus," later "Virgin Mary." November 11, religious, becoming excited at times, gesticulating, emotional, incoherent, violent outbreaks. He was defiant at other times, pressing physician for discharge. He was well oriented, with a vague insight, admitting confused ideas, but denied being insane. No definite hallucinations elicited. No deterioration of intellect or memory apparent. Some emotionalism and religious content of talk exaggerated. Physically he presented absent kneejerks, elbow- and wrist-jerks. Considerable swaying in Romberg. Gelatinous tremor of tongue. Coarse tremor of hands. Left pupil slightly larger than right, both reacting promptly. Oxaluria. Penile scar and admits syphilis.

After January 17, 1899, patient became quiet and orderly, reacting in a normal manner on the wards. He occupied himself with the ward work



NOTE.—Charts A and B were made from examination, November 30, 1900. Charts C and D were made from examination, January 28, 1902.



and amused himself by reading and playing cards. This continued until he was discharged, July 24, 1899, at request of wife, as "Much improved."

He was readmitted six months later.

On admission he was placid but mute, refusing to talk, and when questioned crossed himself and said nothing. He would kneel and pray when town clock struck the hour. That night he masturbated and in the morning spoke to attendants for the first time. Later when tray came in he imitated animals, crowing like a rooster when he saw an egg. He became actively resistive and noisy later, finally quieting down. He attempted to masturbate a second time. There were sudden changes from excitement to calmness. Threatening suicide. These periods of shouting and peculiar actions alternated with absolute mutism. He would suddenly burst out laughing and clap his hands varying strokes as if playing a tune. He became much quieter and on August 20 he reacted to questions promptly and pertinently, at times showing marked emotionalism. He was perfectly oriented and memory was unimpaired at this time, except for events since admission, denying peculiar actions, etc. No hallucinations elicited, but exhibits definite delusions of persecution by wife and vague delusions of poisoning. He reacts to self-accusation, crying out that he has sinned and praying for forgiveness. His calculations showed some defect, though he made very little effort. There was no retardation.

Physically.—Patient complains of lightning pains over right buttock extending down leg and often pains on top of left foot. Slight œdema of both ankles and feet.

Pupils.—Central and equal. Contracted 3 mm. React promptly to light and accommodation. Myopia corrected by glasses.

Cutaneous sensibilities.—*Prompt and accurate for touch and localisation. Pain sense good except outer surface of thighs, ankle, and feet, which are not accurate. Heat and cold sense normal.*

Motor functions.—Slight fibrillary tremor of tongue. Considerable tremor of hands at rest and on rotation. Considerable swaying in Romberg position. Gait steady but with outward swing of left foot (amputated toe).

Reflexes.—Knee-jerks and Achilles absent. Elbow and wrist-jerks equal, but moderate. Abdominal and cremasteric equal and brisk. Plantars normal. There is also a slight systolic murmur heard best at apex and second pulmonic is accentuated.

There was little change in his mental condition until three months later, when he became quiet and a good worker and reacted in a normal manner to his surroundings. September, 1900, patient had an attack of hyperpyrexia lasting three days with temperature reaching 106° and with no apparent cause. The blood examination showed a leucocytosis of 19,353. In April, 1901, patient was put to work with gardner and given parole, and he has been working steadily ever since, showing no marked peculiarities.

PHYSICAL EXAMINATION, NOVEMBER 30, 1900.

No change except that pupils are unequal; right 4 mm., left 5 mm. Both react to light sluggishly. No consensual reaction in left, slight in right pupil. No reaction of either to sympathetic stimulation.

Cutaneous sensibilities.—Touch and localization good everywhere, except for area over chest from costal margin to 6 cm. above nipple line, but touch is retained over central area, covering sternum. Touch is lost on palm of each hand. There is also a girdle on back corresponding to girdle over chest of total anæsthesia. Analgesia shown in girdle over chest and back 12 cm. in width. On back analgesia extends down to small of back. The inner half of right lower leg and top of foot extending out to third toe. On outer side of same leg, hyperæsthesia marked, also top of left foot from outer side to third toe. The rest of left leg analgesic to pain, also both soles of feet.

Temperature disturbance shows absence over chest, anteriorly and posteriorly from neck to costal margins and palms and back of hands and feet from ankle down *much diminished*, face, back of head, both aspects of arms, anterior aspect of legs, and abdomen to pubes.

Cutaneous sensibilities.—January 25, 1901. Other physical and mental symptoms unchanged. Touch and localization around each nipple, extending down to costal margin. Central area over sternum unaffected. When touched below nipple in this area patient feels a tickling sensation in axilla on side touched, and surprised when told he was not touched in axilla.

Analgesia.—None found except for area around left nipple.

Temperature sense.—Much diminished for heat and cold and retarded over whole body except for area over abdomen from costal margin to pubes, where it is normal. Posteriorly everywhere, except in small of back a small band of normal sense is found. Total analgesia—one arm, left nipple, and another on sole of left foot.

Cutaneous sensibilities.—January 28, 1902.

Touch and localisation.—Absent on chest, rather irregular and fat on back asymmetrical.

Pain sense absent both arms ant. and post. except for a small area around left nipple. Fingers of right hand and left hand except first joint of middle finger. The outer side of right, and whole of right leg except inner surface; left leg much diminished on outer half, normal area on inner side of both ankles and whole of right ankle. Top of both feet absent pain. Posteriorly, absence of pain on arms except at elbow. Back of right hand and left hand except thumb, first finger and first joint of second finger. Both buttocks and outer side of both thighs, outer side of right leg and sole of both feet.

Temperature sense.—Absent on chest just above nipple to costal margin, palm and back of each hand, and feet from ankle down. Diminished elsewhere except abdomen from costal margin to pubes and area on small of back.

There has been no marked change in patient since he has been working with the farmer.

The cutaneous sensibilities examined March 3, 1902, show some changes. The areas of anæsthesia to touch over chest were the same, but it was symmetrical over back. Arms showed no analgesia, but areas on hands

and legs were about the same. The areas of thermanæsthesia were but little changed except over chest, where the areas were asymmetrical and one patch being considerably lower than the other. After this frequent examinations were made and always showed some minor variations and patient was in good condition to co-operate. He is still about the same and working on the farm, only showing the physical signs as formerly.

Case XI.—Tabes and general paralysis. Syphilis. Tabes precedes general paralysis by five years. Duration four months. Galloping type—grandiose and excited. Death and Autopsy. Characteristic changes of general paralysis in cortex and typical tabetic degeneration in posterior columns.

L. B. Aet. 45. Salesman. Married. Under the care of Dr. H. W. Mitchell.

Family history.—Negative.

Personal history.—Good business ability and owner of shirt company. Gave it up on account of excessive drinking. Alcoholic excesses for many years up to five years ago. Admits chancre on lip fifteen years ago. Treated by mercurials; no secondaries. Locomotor ataxia for five years, with lancinating pains in legs, unsteady gait, often fell on the street. Treated by Christian Science and claims he promptly recovered (?).

Onset of psychosis.—Three weeks before admission. Talkative in expansive way and irritable. He made various plans and had idea he was to be president of bank. Bought useless articles for house; also stock to give away to friends. Boastful and euphoric. Memory seemed good. Slight speech defect. Never had convulsions and no disturbance of gait. Admitted to McLean Hospital, June 26, 1903. There he was active, writing business letters, sending telegrams, boasting of large stores he is to erect. No insight; says he is perfectly well. Memory good. In conversation speech defect noticed, but test sentences given well.

Physical examination.—Pupils unequal. Stiff to light, prompt to accommodation. Tongue protruded to right. No tremor of hands. Slight unsteadiness in gait. Romberg sign absent. Knee-jerks absent. (No tests for cutaneous sensibilities made.) He was transferred to Danvers Insane Hospital, July 11, 1903, and his general condition was much the same as at McLean Hospital, actively engaged in writing letters, offering to buy property, engaging men at fabulous salaries, and offering to cure other patients by Christian Science. Markedly euphoric and expansive. Well oriented for time, place, and persons. Memory fair; able to give a consistent history of his life, but mixes and confuses dates. Made many contradictory statements that he fails to recognize. Marked pressure of activity. Rambling stream of thought. Rapid transition from one subject to another. No hallucinations, and delusions are mainly expansive in character, continually changing and very absurd. Marked emotional excitability.

Physically.—Slight Romberg symptom. Facial lines obliterated. No pronounced tremor or ataxia, but unable to walk crack in floor. No motor paralysis. Pupils irregular—right larger than left which is of normal size. Very slight direct light reflex and no consensual. Knee-jerks and Achilles

persistently absent. Other reflexes present. Both superficial and deep. Sensations: None found by coarse tests and patient's euphoric condition made tests unsatisfactory. Speech defective, trips and slurs test sentences. Writing not impaired.

He became rapidly worse, more expansive and irritable, constantly active, until August 15. Developed septic leg and elbow joint and died September 1, 1903, of septicaemia.

Autopsy 12 hours post portem, by Dr. A. M. Barrett.

SUMMARY.—General enlargement of superficial, mesenteric, retroperitoneal lymph nodes. Pulmonary oedema. Sepsis right leg.

Brain.—Pia oedematous and cloudy. Slight atheroma of basal vessels.

Cord.—After hardening for two weeks, found the arachnoid of lower thoracic and upper lumbar regions were a number of small bony plates. Section showed degeneration of posterior columns macroscopically.

Brain examined after five months' hardening in 10 per cent formalin, shows nothing except pia thick and tough. Convolutions are smooth and show no atrophies. 4th ventricle scaly, but not granular.

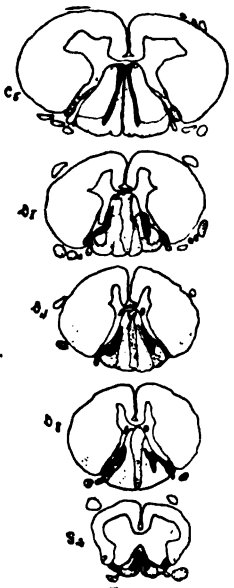
Brain.—Nissl method.

In frontal regions very early changes of general paralysis are seen. The superficial layer shows a great increase in the neuroglia. The blood-vessel changes are slight in some cases, amounting only to a swelling and thickening, but others show some plasma cells in the infiltrate. Everywhere among the nerve cells there is a hyperplasia of neuroglia elements. The nerve cells are shrunken and stain poorly, while others show only a faint staining of nucleus. Destruction of cells is very marked. Many small new-forming blood-vessels are seen. In paracentral regions the changes are more marked, especially changes in blood-vessels, but still more advanced changes are seen in the 1st temporal. Calcarines show some changes of blood-vessels. Altogether we have a picture of early changes characteristic of general paralysis.

Spinal cord.—Section stained by Shaffer's method.

There is some degeneration of Lissauer's tract throughout all the segments, except in the sacral region, where healthy fibers are found. The entering posterior roots are not degenerated in upper and mid-cervical regions, but in thoracic and lumbar regions there is almost complete degeneration, although in sacral region it is not so marked. Posterior root bundles show corresponding degeneration. The plexus of fibers around Clark's column are degenerated throughout that column. The root zones are degenerated throughout the thoracic and lumbar regions. The exogenous system of fibers show the usual degeneration, while the endogenous fibers are intact. The degeneration is most advanced in the lumbar and middle and lower thoracic segments.

The degeneration follows the typical tabetic changes, but is not so marked as in some cases, although the duration of tabetic process was five years.



Case XII.—*Tabetic general paralysis. Exaggerated knee-jerks. Epileptiform convulsions. Pupillary disturbances. Expansive-demented type. Muscular atrophy and contractures. Syphilis in husband. Duration one year. Death from septicæmia. Autopsy. Well-marked changes of general paralysis in cortex and typical posterior column degeneration in cord. Slight lateral column degeneration.*

J. M. D. Female. Married. Aet. 41. Housewife. Under care of Dr. E. E. Bessey.

Family history.—Nothing known.

Personal history.—Early development normal. Ordinary mental capacity. Good education. Married æt. 31. One child six years after marriage, and no miscarriages known of. Menstruation regular until one year ago. Never used alcohol or drugs. Husband admits syphilis when a young man, for which he was treated and supposed that he was cured. Could give no symptoms of syphilis in wife.

Onset of psychosis.—Gradual for one year. Became forgetful and unable to do her housework. Suspicious of husband, irritable, and soon developed expansive delusions. Claimed she had large amounts of money in the banks. Talked of the houses and land that she owned. Gradually became worse, and husband had to lock the doors to keep her from wandering about the streets; grew weaker and took less interest in her surroundings. Several epileptiform seizures at onset of trouble, loss of consciousness for several hours accompanied by convulsive movements of the muscles, stupor and confused for several days, and these seizures have occurred at irregular intervals, the last about one month ago. Committed to Danvers Insane Hospital, December 23, 1903, as being dangerous, violent, and homicidal.

Physical examination on admission showed a poorly nourished, emaciated woman with much muscular weakness and atrophy of muscles, which are small and flabby. Contractures of legs. Was entirely helpless and frequently rolled out of bed. Many bad bed sores, some sloughing, and show neglect.

Neuromuscular condition.—Patient was unable to stand alone.

Reflexes.—Knee-jerks: right much exaggerated, left less than right. Achilles: brisk on left, exaggerated on right. Pupils dilated and irregular. Very sluggish reaction to direct light and none to consensual tests.

Cutaneous sensibilities.—Could not be tested on account of patient's mental condition, but she allowed pins to be imbedded in any part of the body without flinching. At times, however, she appears to realize some discomfort.

MENTAL STATUS, DECEMBER, 24, 1903.

Quiet most of the time, but at night is restless and frequently falls out of bed. Expression demented, lines obliterated. Speech shows characteristic defect, slurring and tripping over syllables, unable to grasp test sentences, and made no effort to repeat them. Profound dementia and unable to answer any questions, though no aphasia was demonstrable and no satisfactory examination was possible.

She failed rapidly and died January 7, 1904, of septicæmia.

Autopsy by Dr. A. M. Barrett.

ANATOMICAL SUMMARY.

Decubitus. Lymphadenitis of mesenteric nodes. Fatty degeneration of myocardium. Septic thrombi of branches of pulmonary arteries. Chronic passive congestion of lungs, acute splenitis. Focal hemorrhagic necrosis of liver. Chronic interstitial nephritis. Acute cystitis. Slight degree of arteriosclerosis of aorta. Chronic leptomeningitis. Septicæmia. Granular ependymitis of 4th ventricle. Chronic meningo-encephalitis. Degeneration and disappearance of tangential fibers in frontal region. Degeneration of posterior column in cord.

Brain.—Weight 1050. Hemisphere 380—right 390, stem 370. Dura not adherent. Pia cloudy and oedematous, less marked in occipital region. Blood-vessels quite normal. The convolutions, especially in frontal region, are narrow, sulci widened. In posterior part of both 1st frontal convolutions are areas of atrophy and fluid collections. Granulations of 4th ventricle. Cerebro-spinal fluid increased in amount and turbid. Cerebral substance flabby.

Microscopical examination.—Chronic meningo-encephalitis. Severe changes of general paralysis in cortex. Slight changes in glia cells. Vessels show characteristic exudates in their walls. Changes most marked in the left paracentral region and 1st right temporal. In this latter region is a small focus where the nerve cells show destructive changes and glia cells are increased. Everywhere the vessels show thickened walls independent of the infiltration. Tangential fibers have disappeared in the right and left gyrus recti.

Cord.—Schaffer's method for medullated fibers. Lissauer's tract shows some degeneration throughout. The posterior root bundles in 5th cervical are intact and in other regions are but little degenerated, and the entering roots all have some fibers, though thoracic 4th on the left the entering roots are degenerated. The fiber plexus around Clark's column is slightly degenerated. The endogenous systems are intact. The root zone, up to the cervical region, shows the most marked degeneration. In lower lumbar region the degeneration is most marked in the area occupied by the 3d foetal system as shown in Fig. V. The degeneration of the posterior columns in the cervical region is in the form of two bands on either side of the median line in Goll's column. There is also slight degeneration of the lateral tract in the lower lumbar and thoracic regions to the 4th thoracic where it stops. This is an early case of tabetic degeneration, as the kneejerks were exaggerated, though the cortical changes were far advanced, and the degeneration of the roots of the lumbar segments was very slight. The degeneration is limited to the exogenous systems, and is slight in comparison with other cases.

TABO-PARALYSIS.

We will now analyze these cases of tabo-paralysis. Nine cases were examined carefully for tabetic symptoms, with especial

reference to the cutaneous sensibility disturbances. As these cases were not too demented at first to co-operate with examination, charts of these disturbances have been made. Nine cases have come to autopsy and a systematic examination of the material has been made as far as possible. In one case (V) no autopsy was permitted. These cases include general paralysis and tabes in various combinations. Case I showed marked tabetic symptoms and the posterior column degeneration of cord was very extensive. This case was considered an atypical general paralytic during life and sections of the cortex examined did not show the lesion common to that disease. In Case II the tabetic degeneration is further advanced than in Case I and typical changes of general paralysis were found in the cortex. Case XII is an example of the other extreme; advanced general paralysis with slight tabetic symptoms. In this case the knee-jerks were exaggerated and would ordinarily not have been considered a tabetic case for that reason. The anatomical findings corresponded with the clinical picture. The other cases show intermediate variations and hard and fast lines of classification cannot be drawn. Four cases may be classed in Group I, where tabes precedes general paralysis by several years (II, VIII, X, and XI). One case (XII) may be classed in Group II where general paralysis precedes tabes. The others will have to go in Group III, as general paralysis and tabes occurring at the same time, although the symptoms of general paralysis were more prominent.

The cerebral symptoms of tabo-paralysis as seen in our series of cases and shown by other writers, especially Mott, do not differ from those seen in general paralysis and present the same variations.

Epileptiform seizures similar to those seen in general paralysis occurred in six cases and were impartially distributed among the various groups. Mott reports 30 per cent of the cases of tabo-paralysis with numerous epileptiform seizures, 34 per cent with one or more seizures, while in 36 per cent no convulsions were observed. Apoplectiform seizures affecting one side and transitory in character were observed in two cases and in one of these (Case IX) transitory sensory aphasia occurred. In Case III after an apoplectiform seizure affecting the right side, knee-jerks returned on that side for a while. This phenomenon has been mentioned by Gaupp and Mott and is difficult to explain.

The mental symptoms seen in tabo-paralysis are similar to those also found in general paralysis and show the same variations. With two exceptions the diagnosis of general paralysis was not questioned in our series of cases and was confirmed by the anatomical findings. The exceptions were Case I, cited previously, and Case X. In Case I very few mental symptoms were noted during a hospital residence of six years, although for two years previous to that he exhibited a marked lack of judgment, irritability and useless extravagances. He was but little demented and was considered an atypical case. In fact upon admission he was considered an epileptic. He had frequent epileptic convulsions, thick speech, marked incoordination and classical tabetic symptoms. From the sections of cortex examined by the Nissl method (right and left paracentral and left frontal regions) none of the characteristic lesions of general paralysis were found, and it is unfortunate that other regions of the cortex were not examined, as it is not unusual for the lesions of general paralysis to be found exclusively in certain areas. Case X is the other exception. As his mental trouble has lasted eight years and he is but little demented, able to work on the farm and reacts in a fairly normal manner to his surroundings.

These two cases, if not general paralysis, would come in the class of tabetics with psychoses other than general paralysis, many of which have been reported in the literature. Mott has selected and reported seven cases illustrating the above condition and in some he shows the marked similarity to general paralysis clinically, although he is unable to demonstrate the disease anatomically. Kraepelin^{*} also mentions this class of tabetics and cites this as one of his reasons for considering the disease processes separate and distinct.

Remissions of mental symptoms were observed more frequently in our series than is usually seen in cases of general paralysis. Four cases have remissions of from one to three years (Cases I, VI, IX, and X). These remissions were found in the two atypical cases mentioned above and in one that was atypical at the onset, but typical changes of general paralysis in the cortex were found. One case (IX) is at present tending to his work after a six-

^{*} Psychiatrie, Siebente Auflage, Leipzig.

months' remission, and, according to his wife, shows very little mental change, though he is somewhat ataxic.

Mott has observed that the presence of the two processes in the same individual has a tendency to hasten the end, and some of our cases seem to substantiate that point. Cases XI and XII, representing the two extremes of tabo-paralysis, were both rapid cases; in the former the duration was four months after the appearance of the mental symptoms, and in the latter the whole duration was one year.

The division of the mental symptoms of general paralysis, according to the form of psychosis, can be made usually at the onset of the disease, and some cases retain certain features during the whole course. We see cases presenting typical manic symptoms, also depression, while others are simply demented from the start. In a few cases paranoic traits seem the most prominent feature. In our series of tabo-paralysis the same variations were found, five cases may be classed as simple demented types (III, IV, VII, X, and XII), while two cases (VIII and XI) belong to the manic or expansive class. Case VI was decidedly depressed and suicidal, and Case V showed paranoic traits. Case II is an example of the circular or alternating form of psychosis, depressed for a year, then manic for a time, and after that daily variations with rather rapid decline after the onset of the manic symptoms.

The fundamental physical signs of tabes could be demonstrated in all of these cases. Disturbance of the reaction of the pupils to light were observed in all the cases. The pupils were immobile to light in seven, sluggish in four cases. In one case reaction to light was recorded as present when first examined, although two years later they were decidedly sluggish. Irregular pupils were found in eight cases, pin-point pupils in two, and in one case the pupils were dilated. Disturbances to accommodation were found in four cases, all of which of course were immobile to light.

The reflexes were as follows:

	Absent.	Exaggerated.	Diminished.	Unequal.	Normal.
Patellar.....	11	1	..	..	..
Tendo-Achilles.....	12	..	..	..	..
Elbow.....	6	2	2	..	2
Fore-arm.....	4	1	5	..	2
Abdominals.....	..	..	..	..	12
Plantars.....	2	..	..	..	10
Cremasterics.....	..	..	..	5	6

From the above table we see that the patellar reflex was absent in all but one case (XII), and in this case the tabetic process was considered as an example of an early type. Tendo-Achilles was absent in all the cases, and can be considered as important as the patellar reflex as a diagnostic sign.

Other symptoms, which are common in tabes, but not always present in the same degree such as lancinating pains, loss of sense of position of joints, marked ataxia, visceral crises, vesical and rectal paralyses, hypotonus, were found in a smaller percentage than in tabes, where the patient's condition permitted a complete examination. In the majority of cases the tabetic symptoms were not so prominent after the onset of the mental symptoms, especially if the patients were in the pre-ataxic stage. There is less amelioration of the tabetic symptoms if the patient is in advanced stage of tabes, when general paralysis supervenes, such as in Cases II and VIII. In Case XI there was a typical onset of tabes five years before admission to an insane hospital. Later this improved somewhat, and when patient was admitted to hospital no symptoms of tabes except absent knee-jerks and stiff pupils could be demonstrated. Objective sensory disturbances were found where the patient was able to co-operate. Cutaneous sensibility disturbances have been given much prominence as a constant and early sign of tabes. Fränkel and Förster¹ have recently investigated thoroughly this phenomenon in fifty cases of tabes and constructed charts from the results of their examinations. In none of the cases were the cutaneous sensibilities considered normal. The trunk was affected in forty-five cases, the arm in thirty-seven, and the lower extremities in forty-four. Where the trunk was affected, anæsthesia to touch was more common and an earlier symptom than analgesia. In only eight cases was analgesia present without anæsthesia. Anæsthesia was also more common in the arm. In the lower extremities analgesia was present or the pain sense was much diminished, though anæsthesia was not so frequently found. Mott examined forty-eight cases of tabes and found objective sensory disturbances in forty-two. He failed to get such a large percentage in tabo-paralysis, which fact he explained by the patient being in the

¹ Archives für Psychiatrie und Nervenkrankheiten, Band 33, heft 1.

pre-ataxic stage when examined and later becoming too demented to test satisfactorily.

He, like the first named writers, found that the disturbance of the cutaneous sensibilities corresponded to certain segments of the spinal cord whose posterior roots supplied the skin. The roots most affected were lower cervical, middle thoracic, lower lumbar and sacral.

In our series we were able to examine carefully nine cases that were not too demented to preclude such examination. Abnormalities were found in all and the areas most affected agreed with the observations of Mott and others. The trunk was most often affected, lower extremities next.

The following table shows the relative frequency of the disturbances in the different areas.

Regions.	Analgesia.	Hyperæsthesia.	Anæsthesia.	Thermanæsthesia.
Trunk.....	10	..	5	7
Lower extremities..	6	2	1	8
Feet.....	5	1	4	7
Arms.....	2	..	..	6
Hands.....	2	..	5	8
Genitalia.....	8	..	2	5
Face.....	2	1	1	2

In regard to the relation of the distribution of posterior roots to the areas of cutaneous sensory disturbances, the same segments were affected as found by Mott, noticeably the lower cervical, middle and lower thoracic, lumbar and sacral. (The upper thoracic segments were not affected to the same extent as found by Mott.)

From the diagram of the distribution of the posterior roots to the skin, after Seiffer, the chart on the following page has been constructed which agrees approximately with the affected areas as found by Mott.

In Cases IV, V, VI, VIII, and IX, the cutaneous sensibility disturbances were limited to the mid-dorsal, fifth lumbar and first sacral regions. These cases represent the slighter degree of tabetic affection and the clinical picture was supported by the anatomical findings.

Case IV, though able to co-operate well, failed to show any well-marked involvement of the cutaneous sensibilities, even on repeated examinations. The anatomical findings in the cord were

of a very mild degree of degeneration, and none of the posterior roots were completely degenerated.

Cases I, II, and X were types of advanced tabes, and consequently, the cutaneous sensibility disturbances were well-marked.

In Case VIII these disturbances were not so well-marked, though this case represented well-advanced tabetic degeneration. One peculiarity that was frequently noticed was the marked changes in the areas affected, at different examinations, even from

CASES.

Segments.	I	II	III	IV	V	VI	VIII	IX	X
C-1		A	....	....	....	....	....	....	C
2	A-B-C	A	....	....	....	....	....	....	C
3	....	A	....	....	....	....	....	....	C
4	....	....	....	....	....	....	....	....	....
5	....	....	....	....	....	....	....	....	A
6	....	....	....	....	....	....	....	....	A
7	....	....	....	....	....	....	....	....	A
8	A-B-C	A	....	C	....	....	B	....	A-O
Th.1	A-B-C	A	....	C	....	....	....	....	A-C
2	....	A	....	....	....	....	....	....	....
3	....	A	....	....	....	....	....	....	....
4	A-B-C	A-B	A-B-C	A-C	A	A	A	....	A-B-C
5	A-B-C	A-B	A-B-C	A-C	A	A	A	....	A-B-C
6	A-B-C	A	A-B-C	A-C	....	....	....	....	B-C
7	A-C	A	A-B-C	A	....	....	....	....	B-C
8	A-C	A	A-B	....	....	....	....	....	B
9	C	....	....	....	....	....	....	....	....
10	....	D	....	....	....	....	....	....	....
11	C	....	....	....	....	....	....	....	....
12	C	....	....	....	....	....	....	....	A
L.1	A-B-C	....	....	A	....	....	A	....	A
2	....	D	....	A	....	....	A	....	....
3	A-C	A	C	....	....	....	....	....	....
4	A-D-C	A-C	C	....	....	....	....	....	....
5	A-B-C	A-B-C	B-C	B	B-C	A	C	B-C	A-D-C
S.1	A-B-C	A-B-C	B-C	B	B-C	A	C	B-C	A-C
2	A-C	A	....	A-C	....	....	....	....	A
3	A-C	A-B-C	....	....	B-C	....	....	....	A
4	....	....	....	....	....	....	....	....	....

Anæsthesia A
Hyperanæsthesia D

Analgesia B
Thermanæsthesia C

day to day. Areas affected at one time may be normal when tested again. (Compare Cases I, III, and X.) Usually these areas are slight and some areas were constantly affected. Usually the progressive character of the cutaneous sensibility disturbance is very marked. In Case I an area on the right leg that was hyperæsthetic during lancinating pains on that side, on subsequent examination with the absence of these pains, entire analgesia was found.

This variability in the areas affected has also been found by other observers. Much stress has been laid upon the polymor-

phous forms of the sensory disturbances of the skin. Results may be modified by several things, such as cerebral fatigue, summation of excitation, or exhaustion of excitation. Besides this the overlapping of the various roots in certain areas will confuse one's results. No one, who has attempted to examine cases for sensory disturbances, but will agree with the difficulties arising from the facts above mentioned.

In our series, examinations made at different times have been charted and two charts are given in the majority of cases with the dates attached. In some cases upon first examination the cutaneous sensory disturbances were slight and later these patients were too demented to co-operate, so that charts were not made, and unfortunately these cases could not be used for the purpose of localization.

Our experience has been that these disturbances as seen in tabo-paralysis do not differ from sensory disturbances found in tabes, except in the extent of the areas affected, and this seems to be in harmony with the anatomical findings. Other symptoms found in tabes, but not always constant, were found in cases of tabo-paralysis though to a less extent.

Girdle sensations and lancinating pains were observed in a few cases, more frequently among the cases where tabes preceded general paralysis by several years, but in only one case were these disturbances noted (Case I), after patients came into the hospital. Only two cases had recurring gastric crises, and one case suffered from optic atrophy (Case VIII). This case belonged to the group cited above.

PATHOLOGICAL ANATOMY.

It is more difficult to establish the unity of tabes and general paralysis upon the basis of pathological anatomy, because of the unsettled status of the pathogenesis of the two processes. Conflicting opinions are also held regarding the nature of the processes, especially that of general paralysis, and it will be necessary to first review some of these opinions before discussing their identity.

Nissl in his latest work^{*} reviews the question of the nature of

^{*} Histologische und Histopathologische Arbeiten, Jena, 1904.

the paralytic process, and comes to the conclusion that two processes are present in the cortex. The inflammatory process, affecting the non-nervous elements (blood-vessels, pia) and another which is not inflammatory, but degenerative in character, affecting the nervous elements (nerve cells, fibers and neuroglia).^{*} While these processes go hand-in-hand they must be considered as distinct, and neither must be considered as pathognomonic of the paralytic process. Some cases will show one process more prominent than the other, and certain regions of the cortex in the same case will show this variation. He places much stress upon the occurrence of the plasma cells in the exudate of the adventitial sheaths of the blood-vessels as proof of the inflammatory character of the process in the non-nervous elements.

Schaffer¹¹ is inclined to consider the degenerative character of the process as most important. He also considers the degeneration an elective one for certain systems of fibers, namely the finer tangential fibers, and from these superficial fibers the disease spreads to other layers. He argues from the fact, that in typical cases of general paralysis certain regions of the hemispheres, i. e., the frontal lobes, are always affected earlier and in a more marked degree than other regions, the occipital region being the least affected. He admits the occurrence of atypical cases, in which there is some divergence from the rule, but still maintains that the process is selective for certain systems or is a "system disease," rather than a diffuse one. This view is also held by Tuczek and Zacher. Schaffer is opposed by Nissl and Alzheimer, who, though they admit that in typical cases the frontal lobes are affected more than others, maintain that the process is a diffuse one and not elective in character, and they claim that Schaffer, by admitting atypical cases, must admit also the diffuse nature of the process as well.

Mott¹² is inclined to agree with Schaffer in regard to this elective character of the process and advances the hypothesis that the localization of the process depends not only upon the presence of some irritant toxin, but upon anatomical and physiological

^{*} Regressive changes in nerve cells and fibers and progressive changes in neuroglia, as a result of degenerative process in nerve elements.

¹¹ *Loc. cit.*

¹² *Loc. cit.*

factors as well. The peculiar condition of the arterial and venous circulation in the fronto-central regions, which favor stasis, he believes partially explain why these regions are attacked.

Coupled with this anatomical factor is that of stress, and these would tend to lower the resistance and so allow a toxin to fix upon these regions of the central nervous system.

This toxin would come from syphilis. He suggests that syphilis, like some other toxins (diphtheria, tetanus), may contain some latent elements which have a special affinity for nervous structures, but it takes much longer for these elements to become active. From the fact that we have no knowledge of the specific germ of syphilis and that as yet all animals enjoy an immunity to infection, he claims that it can be argued by analogy that the syphilitic virus may contain several poisons, one of which is latent and produces these late manifestations, tabes and general paralysis, also that this toxin only becomes operative under certain abnormal metabolic conditions of the central nervous system. While this is a reasonable hypothesis and worthy of consideration it is difficult to establish, and the anatomical features have been attacked by Alzheimer. In view of the difficulty in proving the rôle that syphilis plays in the causation of the process, Nissl prefers to consider the subject not from a bio-chemical, but entirely from an anatomical view point. Mott claims that the plasma cells are indicative of an acute irritative process in the cortex—"and their abundance is clearly associated with the amount of acute neuromic irritation and destruction"—which is somewhat at variance with Nissl's view.

While there are other views on this question, this represents the present status of the work, and as yet the pathogenesis is much in doubt. By assuming a position that does not side with either extreme we are justified in arriving at the following conclusions.

1st. The general paralytic process in the cortex is both inflammatory and degenerative in character.

2d. That these processes are not dependent upon each other, but are probably produced by the same harmful agent.

3d. In typical cases, certain regions are always affected earlier and to a more marked degree than others.

4th. Certain systems of fibers are more liable to degenerate than others.

5th. That the pathogenesis is as yet unknown.

We will now consider the theories which have been advanced to account for the tabetic process.

Obersteiner and Redlich accounted for the degeneration of the posterior root fibers by a mechanical strangulation of the posterior roots in passing through the meninges of the cord, due to the meningitis. Nageotte attempts to explain the same degeneration by an inflammatory process in the membranes covering the roots. Both of these theories are attractive, but have many faults, principally that meningitis is not always an early finding in tabes; also this theory fails to account for the changes that occur in other parts of the nervous system.

Theories based upon the neuron concept have been formulated, but up to the present time anatomical studies have failed to substantiate them. That the spinal ganglion cell is the center for the posterior root fiber is not doubted, but so far investigations have failed to show changes in these cells that could account for the extensive degeneration of its proximal fibers. Another point is that the peripheral branches would have to show degeneration as well as the proximal branches, and this has not been demonstrated anatomically as yet.

Marie's hypothesis, that the finer end arborizations of the spinal branches of the ganglion cell are first affected and accounts for the intra-medullary degeneration of the posterior roots, has not been entirely substantiated, though it harmonizes with some of the anatomical facts. As yet we have no proof that the spinal ganglion cell is the seat of the primary affection of the spinal afferent neurons.

The hypothesis based upon the presence of a peripheral neuritis in tabes, whereby retrogressive changes occur, which affect the spinal ganglion cells and through them affect secondarily the proximal branches is untenable, because the peripheral neuritis is not a constant symptom in tabes and usually does not occur until after the intra-medullary degeneration.

Edinger's theory of the tabetic degeneration is based upon the hypothesis that in functioning, there is a natural loss in the nervous elements, which in normal conditions is made good, and that conducting paths that are over-exerted may pass the limit of natural replacement of material and so show the phenomena of

degeneration. Various conditions, such as blood supply, toxins, etc., may be the cause of the fibers of conducting paths losing this normal balance, and degeneration occurs. This theory explains many things, but why the posterior roots are affected in preference to the anterior roots can be explained only by assuming that the posterior roots offer less resistance to the toxic agents.

The anatomical studies at present would lead one to believe that the degeneration of the posterior columns in tabes, is a primary intra-medullary degeneration of the posterior roots, and that other changes are produced by the same factors. This view appears more rational as it supports the theory of a toxic substance, selective in character as causing the process. With the widely accepted doctrine that syphilis is the cause of the tabetic process this view is best harmonized.

As regards the pathological anatomy of tabo-paralysis, our series of cases quite bear out the opinion of Schaffer and Mott, that in regard to anatomical location and character of the degeneration of the posterior columns, it is identical to that found in tabes. In a great many cases it was not so far advanced, but the same exogenous systems were affected and the segmental distribution was the same, usually more marked in the middle thoracic and lumbo-sacral regions.

The degeneration of the posterior roots in no way differs from that of tabes, and this is shown in the drawings made from serial sections. The root zone of Charcot usually was degenerated, Lissauer's tract or the marginal zone was in the advanced cases almost entirely degenerated, in the other cases moderately so. It is stated that this tract is one of the first to be affected and to a marked degree in tabes. The endogenous systems, the comma tract, ventral posterior zone, the septo-marginal tract, oval area of Fleischsig, and triangle of Gombault and Philippe were but little affected except in Cases I and II, which were considered pure tabes with all the classical symptoms and very far advanced. In those cases the endogenous fibers were affected to some extent and a great deal more than in the other cases.

The recent work of Fleischsig and Trepinski, who investigated the myelinization of the posterior columns in the fœtus, is very interesting in regard to the location of the degeneration in tabes. The latter finds the myelinization of fibers occurs in regular

systems, and he makes a division of four systems, in order of their myelinization. The third foetal system, which he holds is a well-defined area, conforms with the area of degeneration in the lumbar region in beginning tabes. The similarity of the two pictures as commented upon by Barker¹² is very striking and of much interest. This is shown very clearly in the photomicrograph (Fig. 5) of a lumbar segment in a case of general paralysis with very early tabes (Case XII), in which the patellar reflexes were exaggerated, and this picture is identical with the picture shown by Trepinski, i. e., beginning lumbar tabes.

This is contrasted with Fig. 6, which was considered a case of arrested tabes (Case XI) after a typical onset, and the same area is found degenerated though the columns are narrower and more shrunken. The fact that the degeneration of the posterior columns in tabetic general paralysis takes the typical form of a beginning tabes, is considered by Schaffer as very important in establishing the identity of this degeneration and pure tabes, and the point is well taken. The two pictures are similar.

Fürstner, Schmaus, and Gaupp all claim a decided difference in the posterior column degeneration of general paralysis and tabes. They divide this degeneration into:

1st. Posterior column degeneration that cannot be differentiated from pure tabes. These cases they claim are pure tabes upon which general paralysis has been grafted later.

2d. A combined degeneration of posterior and lateral columns, which, they claim, does not resemble tabetic degeneration, but is scattered without regard to definite systems.

They hold that the endogenous system is affected by the degeneration as seen in general paralysis, which is affected in tabes but little, and then only in advanced cases.

Mott, on the other hand, shows that the anatomical findings in the two conditions are, as a rule, identical, both as regards exogenous and endogenous fiber degeneration. The same segments are affected in the same manner, and in advanced cases nearly all the exogenous fibers are destroyed. Schaffer comes to the same conclusions and can find no difference in the degeneration. Nageotte holds that the posterior column degeneration in general

¹² The Nervous System, p. 436.

paralysis is identical with the tabetic lesion, whether combined with lateral column degeneration or not. In regard to the lateral column degeneration, Mott considered it as coincident and not related to the posterior column disease. The cause of this degeneration he considers as cerebral, and from the fact that it is seen more distinctly in the lumbo-sacral region and disappears in the higher regions, he argues that it is caused by progressive atrophic changes, affecting cortical psycho-motor neurons with the longest axons. The affection of the direct pyramidal tracts, Mott ascribes to changes in the cortex, either bilateral or unilateral, and associated with epileptiform seizures.

The findings in our series of cases, though small in number, tend to support the findings of Schaffer and Mott.

Three cases showed degeneration of the cross pyramidal tract (Cases II, VI, and XII), while Case II was a classical tabetic and, as in the others, very marked and extensive changes of general paralysis were noticed in regions of the cortex, and in only one case were convulsions observed with this degeneration (Case XII).

As would be expected, the cases belonging to Group I showed the most extensive degeneration of the posterior columns (Cases I, II, and VIII); and in these the endogenous systems were affected in a marked degree. Case XI, which from the clinical symptoms may be considered as belonging to this group, in which the tabetic symptoms appeared five years before the onset of mental symptoms and were stationary for a long while, strikingly illustrates, by the moderate degeneration found in the posterior columns, how the tabetic process may be temporarily arrested. The degeneration, as compared with other cases in this group, is much less marked. In no case did affection of the endogenous systems occur without marked degeneration of the exogenous systems and the relation between the degree of ataxia and the degree of affection of the endogenous systems, also the degeneration of the fibers around the cells of Clark's column, as expressed by others, is substantiated by these cases, all of which were markedly ataxic. In Case VII the degeneration is more marked than in others of the group of general paralysis and tabes occurring at the same time, and partakes of the characteristics of Group I.

The lesions of the cortex in our series of cases, with one exception, show typical changes of general paralysis. In some cases these changes were very far advanced. In Case XI, which has been cited several times, the lesions of the cortex are very early and the nervous elements show very marked change, while there is little change in the blood-vessels and neuroglia. Case I is the exception, as we failed to find the usual changes of general paralysis in the sections examined, viz., the left frontal, right and left paracentral convolutions. However, this case showed the macroscopic appearances of general paralysis; adherent dura, haziness of pia, especially over frontal lobes, with considerable injection of pial vessels. Pia about the temporal lobes was much thickened and adherent. Microscopically, the ordinary changes of general paralysis could not be demonstrated. It corresponds to a similar case reported by Mott, and he raises a question whether his case was one of mania and tabes or whether tabetic paralysis with arrest of mental symptoms. Case II, while a typical case of tabes with advanced affection of the posterior columns, also had well-marked advanced changes of general paralysis in the cortex. While in Case VII the changes in cortex are very slight, so we see the variability in the anatomical picture in tabo-paralysis is similar to that seen in general paralysis.

In a number of cases the spinal ganglia were studied by different methods, but without any positive results as yet. Sections stained with toluidin blue show very few cells that were changed, while the majority of cells had a normal appearance even in the advanced cases of tabes. Studies with the Unna method were equally negative as regard changes in the ganglia that bore any relation to the extensive degeneration seen in the intra-medullary portion of the posterior roots. This has been the experience of Mott and others who have made similar studies.

While we are convinced that the tabetic and the paralytic processes, when found together in cases of tabo-paralysis, are identical with the processes when found separately, we have yet to consider the question,—Are the processes identical, only differing in location in the central nervous system?

If we accepted Schaffer's view, that general paralysis is a system disease, in that it selects certain systems of fibers in certain regions of the cortex, we can, as he does, harmonize with the

tabetic process, which, from our present knowledge considered as a selective or system disease; and Sch strong proof to uphold the point of the selective character of the general paralytic process, and state "anatomical characteristics of the postulated different two processes are only artificial," and that the etiology only attacks the point of least resistance first.

Mott argues from a bio-chemical view point, as presence of an irritant toxin (which is not unwarranted) arguing that it acts upon the central nervous system in a manner analogous to alcohol, lead and other poisons. These produce a morbid process in the brain, spinal cord or nerves in different individuals, though the disease producing these various regions, is essentially the same. As true for these poisons, it is reasonable to suppose that of syphilis follows the same rule. This view would consider the process as the result of an irritant poison only affecting regions of the central nervous system that offered least resistance. This view is in harmony with some of the facts, and is practically the same as that taken by Edinger's theory of the tabetic degeneration is based on the same hypothesis.

Nissl merely leaves out the bio-chemical factor and considers the anatomical picture and believes that the processes are entirely separate.

Unfortunately, this question cannot be entirely settled from an anatomical view point, until we have a better knowledge of the pathogenesis of the processes, but from the evidence at present we would be warranted in believing that a striking similarity between the processes is present and that those who take the view that the processes are identical, have some basis at least for their opinion and that their opponents have as yet failed to entirely overthrow the contrary opinion.

In conclusion:—From the study of the literature and the results presented in this series we can come to the following conclusions:

1st. That clinically tabes and general paralysis present striking analogies in etiology, symptomatology and course.

2d. That their occurrence in the same individual is not a coincidence.

3d. That in these cases of tabo-paralysis the symptoms presented are identical with the symptoms of general paralysis and tabes when seen apart, only differing in degree, according to the extent of the anatomical lesion.

4th. That the clinical symptoms of tabo-paralysis have the same anatomical basis as in the separate diseases.

5th. That anatomically the affection of the posterior columns of the cord as seen in tabo-paralysis does not differ from the picture presented in pure tabes. The same systems are affected and the segmental character of the process is the same, also that the process in the cortex is identical with that of general paralysis.

6th. While the above facts show the intimate relation between general paralysis and tabes dorsalis, the unsettled status of their pathogenesis at present, prevents their identity being absolutely established on an anatomical basis.

I herewith desire to express my thanks to Dr. Meyer and Dr. Barrett for their valuable help and criticism, also my colleagues at the Worcester and Danvers Insane Hospitals, who have also rendered valuable assistance in the preparation of this paper.

EXPLANATION OF PLATES XLV, XLVI, AND XLVII

(Medullated fiber preparations) $\times 8$ diameter.

FIG. 1.—3d cervical segment from Case II.

a. Entering posterior roots intact, also root zones.

Degeneration limited to Goll's column.

FIG. 2.—8th cervical segment from Case II.

a. Complete degeneration of entering posterior roots (compare Fig. 1), also degeneration of root zone.

b. Lissauer's zones severely affected.

FIG. 3.—5th lumbar segment (Case II) advanced degeneration of posterior columns, only the ventral posterior zone intact, and a few fibers in the septo-marginal tract.

FIG. 4.—8th thoracic segment (Case II), showing advanced degeneration of posterior columns, also degeneration of plexus of fibers around the cells of Clark's column (a).

FIG. 5.—5th lumbar segment (Case XII). Beginning tabetic degeneration. The light triangular area corresponds to the 3d foetal system of Trepinski. Slight degeneration of Lissauer's zone. (Contrast Figs. 3 and 6.)

FIG. 6.—Lower lumbar segment (Case XI). Moderately advanced degeneration of posterior columns, more extensive than in Fig. 5. Endogenous systems intact. Posterior root bundles show scattered degeneration. Posterior columns are more shrunken than in Fig. 5.



FIG. 1.

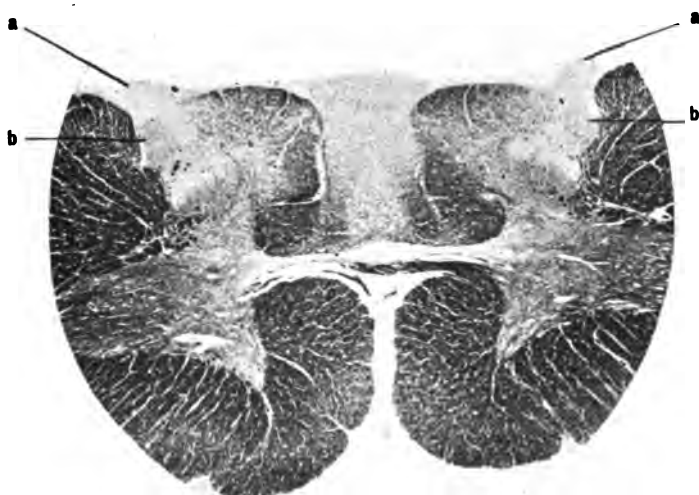


FIG. 2.

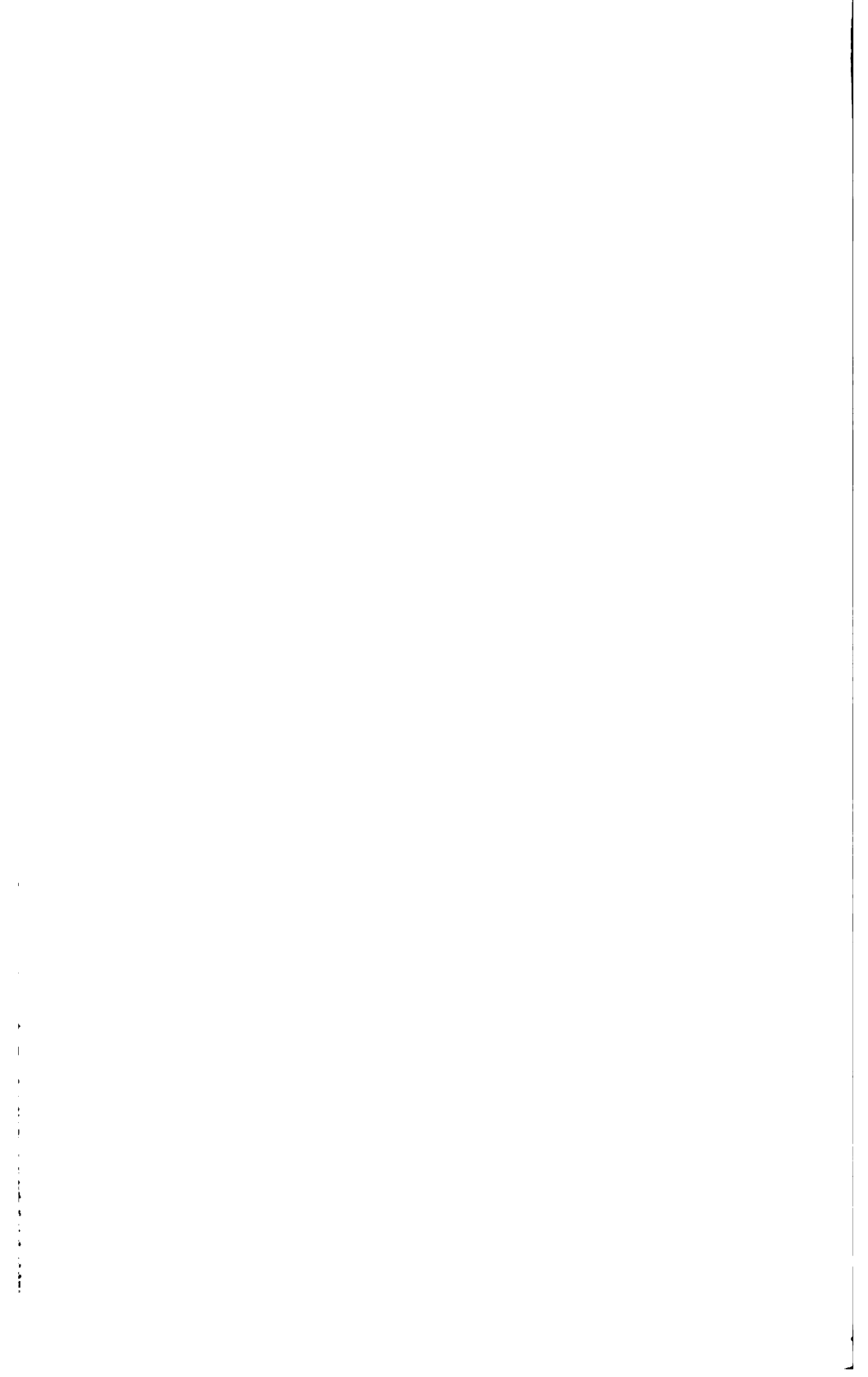




FIG. 3

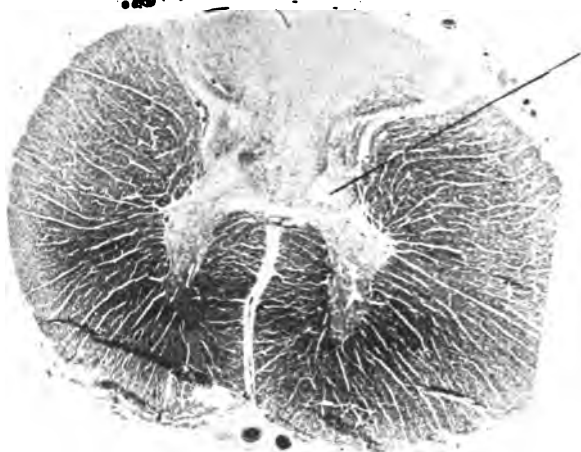
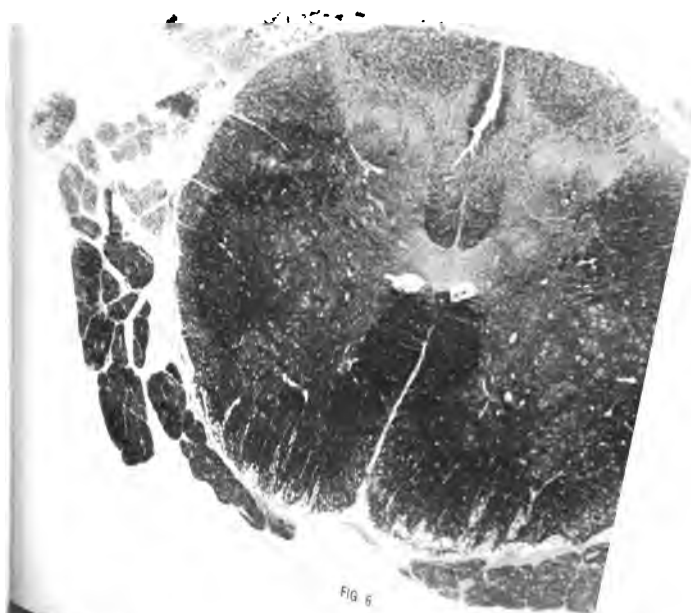
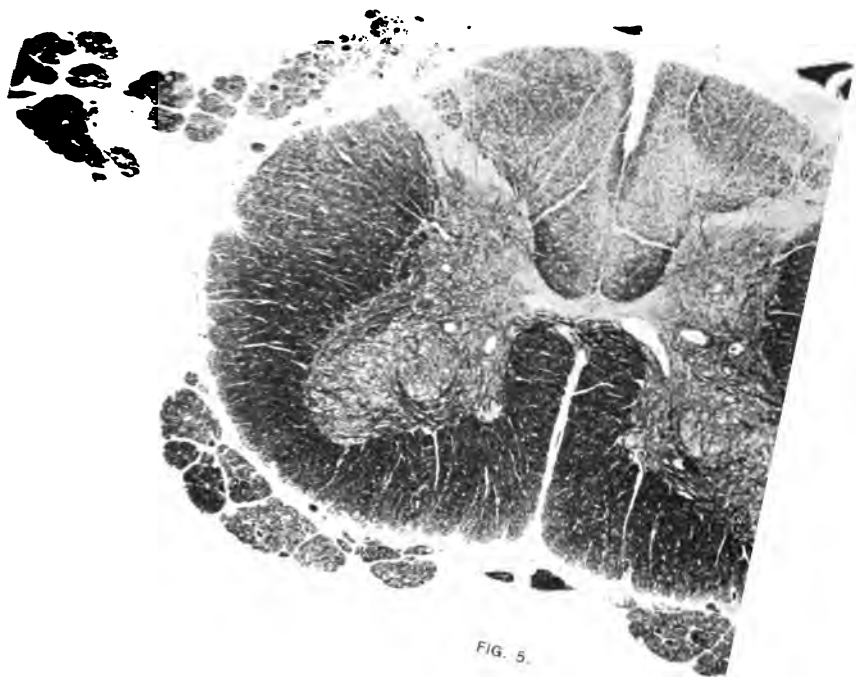
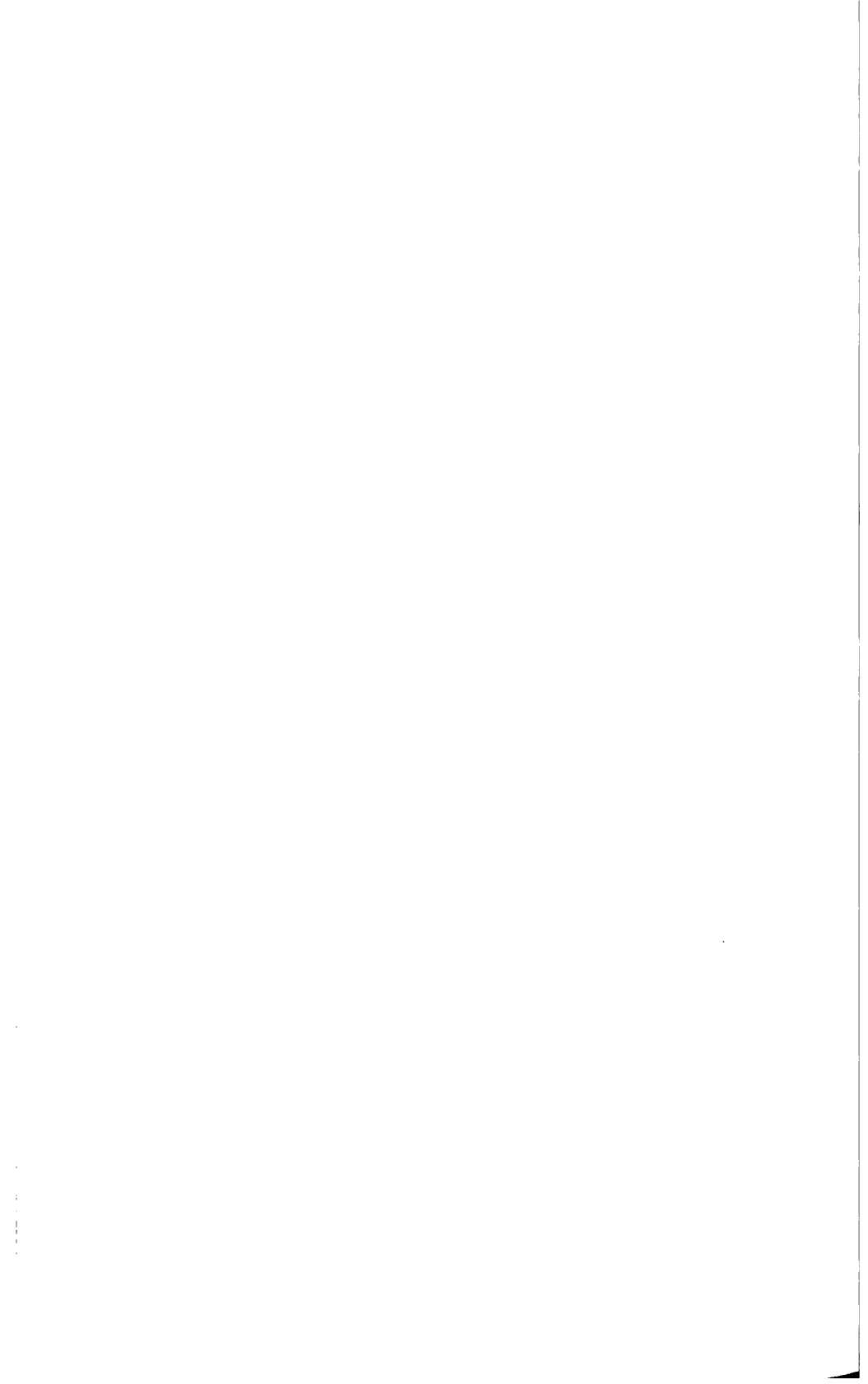


FIG. 4.





NOTES OF A VISIT TO SOME FOREIGN HOSPITALS FOR THE INSANE—MAINLY IN GERMANY

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Several months ago an opportunity was afforded me to visit some of the best psychiatric clinics of Germany and of France, to renew old acquaintances and revisiting familiar scenes in London and Great Britain. To my experiences and observations in these countries, I shall refer but briefly, it being the intention of the present paper to speak more particularly of the clinics of Germany.

It is now several years since I had the pleasure of making upon a visit to some of the asylums and hospitals for the insane of Great Britain.¹ The observations then made pertaining to questions of management, nursing, restraint and non-restraint, a question, at that time, still much discussed on this subject, the water, the occupation and recreation of patients, and other subjects, and but little notice was made in the "Notes" of the methods or laboratory work where any was undertaken in the institutions visited.

Subsequent visits to some of the institutions seen in Germany, as compared to others both in Great Britain and on the continent, were materially more fruitful in observations, of methods of study of cases, or in therapeutic procedures though not by any means devoid of much that was of value in these as well as in the other directions.

When, therefore, I approached the psychiatric clinics of Germany, many it was not so much to observe the methods of their management, though these points were not by any means without interest, as to study the clinical and laboratory methods in vogue.

¹ Notes of a visit to some of the asylums of Great Britain. *Journal of Insanity*, January, 1883, p. 269. *Bulletin de la Médecine Mentale de Belgique*, 1883.

clinic at Giessen had been described by at least one American visitor,⁸ and the one at Heidelberg was perhaps better known through the work of its director, Kraepelin, while the recently opened and the newest establishment, the one at Kiel, had just been fully described and illustrated.⁹

The clinic at Kiel was the first of the German clinics which I visited. It had been open but a few months, and but a small number of patients had been admitted, although the wards were fairly full. It is delightfully situated on an elevated site overlooking the bay, in the northern portion of the town, and about half an hour's walk from the university and the other clinics, medical and surgical. Although a description of the buildings with illustrations has been read to the Association and published in its transactions, I shall, at the risk of some repetition, go somewhat into detail in describing them, as they represent the most recent German ideas, except possibly the new clinic at Munich, just opened. The clinic has been erected on the pavilion plan (see Plate XLVIII). There is a central administrative block with wards on either side (Hauptgebäude), two villas for first- and second-class patients of each sex, and two detached buildings for excited cases (Isolirhäuser), a central kitchen and laundry building combined (Wirtschaftsgebäude), heating plant (Kesselhaus), porter's lodge at the gate, and in one corner of the grounds the house of the medical director. The clinic is intended to accommodate one hundred and thirty-nine patients, of whom twenty-three are first- and second-class (paying), and one hundred and sixteen third-class (public) patients.

The director of the clinic, who was active in the preparation of the plans and in seeing them put into shape to the most minute detail, is Prof. Siemerling. He holds the chair of psychiatry in the Kiel University and gives clinical instruction at the hospital.

⁸ A visit to the Newest Psychopathic Hospital. By Frederick Peterson, M. D. *The Medical News*, January 20, 1900.

⁹ Der Neubau der psychiatrischen und Nervenkllinik der Universität Kiel, von Dr. E. Siemerling, Professor und G. Lohr, Kgl. Reg.-Baumeister u. Komm. Bauinspektor. *Klinisches Jahrbuch*, 1902. This clinic has also recently been described and illustrated in an article published in *The Proceedings of the American Medico-Psychological Association*. Vol. X, p. 426. By Dr. L. Pierce Clark.

In the central or administrative building the basement (Plate XLIX) contains the chambers for heating coils, a porter's lodge, rooms for photo-micrography, and an Aertzekasino (recreation rooms for the medical staff). On the ground floor (Plate L) are waiting rooms for the examination of out-patients (Poliklinik), rooms for an assistant physician, a chemical laboratory, and a large room which can be devoted to use as a chapel or for other purposes.

On the second floor (Plate LI), over the chapel just referred to, is a large lecture hall with seats for ninety students, arranged as an amphitheater with an entrance for the students at the top row by means of a short flight of stairs. The private office of the medical director communicates by a door with this lecture hall. I saw and had demonstrated to me in this hall the Zeiss epidiascope, used for projecting microscopic preparations, photograph positives, large slides, and even opaque objects, as for example a drawing, or the page of an illustrated book, or even pathological specimens, in a magnified form. There is also on this floor the laboratory, a conference room for the medical staff, a medical library, and rooms for another assistant physician. On the dormer floor are rooms for a third assistant physician. Extending to the right and left of the central building are the wards for quiet patients, men and women (Plate LII). Entering the ward on either side through a short passageway, one sees on one side of the passage a room for the medical examination of patients, supplied with the usual instruments for general physical and neurological examination, and on the other a room for a single patient. The observer then passes into a dormitory or ward for ten patients and two nurses, and then into a passageway on either side of which are rooms, three of which are for patients, one used for an electric bath, three other bath-rooms, and two water-closets, one at either end, and a stairway leading to rooms above this central portion for three nurses. Beyond is another ward for ten more patients and two nurses, and then a passage leading out of the end of the ward similar in length to the one entering the ward, with a patient's room on one side and a nurse's on the other.

At either end of these two wards and in line with the rear line of the buildings are two separate vilas, one for either sex. These villas are two stories in height and are for first and second class patients. In the basement are kitchens, an arrangement which ap-

peared to me to be a serious mistake, although the communication of odors to the upper floors was as carefully as possible guarded against. There are also storage rooms and the heating and air filtering apparatus. There is a room for an assistant physician in each of these villas.

The ground floor (Plate LIII) has a large day room and pantry and serving room, bath room, and water closets, and four rooms accommodating from two to six patients each, and a nurse's room. The second floor (Plate LIV) has a similar arrangement, except that there are six single rooms and two rooms one for two and one for four patients.

The isolating wards for noisy patients (Plate LV) accommodate thirteen patients each, and are but one story high. They each have a large day room, a pantry, and serving room, two observation rooms for three and five patients respectively, and five single rooms, a bath room and water closet.

The central kitchen is midway between the two isolation wards, and in the same building is the laundry, a very undesirable combination. The kitchen is light, well arranged for the preparation of the simple and somewhat frugal diet of the public patients, but there is no arrangement for conveying food to the widely separated wards except through the open air and by hand. After the food arrives at the wards it is warmed over, when deemed necessary, in the small service pantries on each ward. In this building also reside the kitchen employees and other servants.

The buildings are warmed by the indirect system, and arrangements exist for filtering the air and modifying the humidity; and are lighted by electricity. The house of the director is in one corner of the grounds, near the main entrance, and is a very tastefully constructed and commodious structure.

The next clinic which I visited was that of Prof. Jolly, of Berlin, whose recent death is mourned by all students of psychiatry. This, like that at Kiel and those at Heidelberg and Giessen, is a mixed clinic, that is, both mental and nervous cases are received. At Berlin, however, the plan is to be tried of having the buildings separate. The neurological clinic is new, but recently opened, and contains the laboratories, library, lecture hall, anatomical and pathological museum, etc., which will be common to both. At the time of my visit a large plot of ground was being cleared for the

erection of the wards for the insane, which are to be built somewhat in accordance with the plans at Kiel and Giessen, that is, on the separate pavilion plan. The Germans do not try to make things appear different from what they really are, and refrain from calling a structure, which affords room for from fifteen to twenty patients and their nurses, a cottage!

The new neurological clinic is in the general enclosure of the large Charity Hospital of Berlin with its various departments or clinics, and is the most modern of them all. Entering at a central doorway, to the left of which is the porter's room, one ascends by a flight of stone stairs to the third floor, where a large hall or lobby affords lodgment for an interesting and valuable collection of pathological specimens of the brain and general nervous system, and also a series of casts and drawings illustrating normal and diseased structures. This lobby gives access by several doors to the top seats of the lecture hall, which occupies the space of two floors. The lecture hall is supplied with a projection apparatus, and all of the windows which light it from two sides are provided with light-proof screens which effectually darken the room when the projection lantern is used. Back of the lecturer are blackboards and supports for drawings and charts. A door leads from the floor of this amphitheater to the director's private room and to a waiting room for patients. Here I heard my first clinical lecture in German upon psychiatry. The first patient was one with paranoia. As he was brought in by one of the assistants, the clinical notes of the case comprising a history of the case, and an account of the observations made since his admission to the clinic, were laid before Prof. Jolly; a student was called by name from the audience and proceeded to examine the patient before the class. After examining and questioning the patient he announced his diagnosis. Prof. Jolly then took up the case, pointed out certain facts and symptoms which the student had overlooked, and then gave a brief discourse on paranoia. The next case had symptoms of katatonia, or katatonic symptoms, depending upon whether one admits Kaulbaum's contention that katatonia is a distinct disease or the one which is now receiving the largest number of adherents that katatonia is but a symptom which appears in different conditions and under different guises. The student called to examine this case, overawed possibly by the contradictory view held

by equally eminent men, could not make much out of the case, and it was soon taken out of his hands and the essential features, both psychical and physical, which were present, rapidly and clearly pointed out. I soon discovered that Prof. Jolly thought for himself and that he did not hesitate to express his dissent from some of the views held by other teachers.

The third case was wheeled into the room on a bed and was a case of alcoholic neuritis with Korsakoff's symptom-complex, and the last case, a woman, proved also to be one of alcoholic origin, one of chronic alcoholism, with the delusions of suspicion so characteristic of many of these cases.

After each of these cases had been examined by students and the points they made out demonstrated to the class, Prof. Jolly took up the cases and gave a brief talk on the effects of alcohol.

Prof. Jolly conducted me about the wards of the clinic, which, being intended eventually for nervous cases only, do not differ materially from the wards of a general hospital. The laboratories are large, light, and well arranged, and are liberally supplied with apparatus. There are in connection with the clinic, rooms for spray, needle, and electric baths, massage rooms, and the like.

The rooms for the reception and examination of patients are well supplied with all the necessary apparatus, electric and otherwise, for diagnostic purposes, and there is a separate room for electrical treatment. On the ground floor there is also a large room filled with suitable apparatus for the mechanical exercise of paralyzed limbs and muscles.

I spent two days at this clinic with much interest. Prof. Jolly was for many years, as is well known, the editor of the *Archiv für Psychiatrie und Nervenkrankheiten*, established by Griesenger. He is succeeded in the editorial management by Prof. Siemerling, of Kiel. I spent one day in an excursion to Daldorf, one of the suburbs of Berlin, where I saw the large and elaborate district asylum, which receives its patients largely from the clinics of the city. Prof. Sander, the director, was away, but one of his assistants kindly showed me about and gave me every facility for seeing the institution. The present asylum was opened in 1880, and is in its general construction and arrangement much like one of our large state asylums. It has accommodations for over 1100 patients, has about 100 criminal insane in a separate building, and a

small establishment for idiots. The director and his family reside in the main building in spacious apartments, and he is the supreme head of the establishment, having under him a suitable staff of heads of departments who are held responsible to him alone. This indeed is the principle upon which all the German hospitals and clinics are organized. The director is the supreme authority, having, of course, subordinates who take from him the care and trouble of details. The idea is the same as that announced long ago by Heinroth: "The proper soul of an institution for the insane is the physician," and the Germans have acted consistently upon that theory ever since. Speaking of Illenau, Dr. Roller said: "The improved condition of this institution, as well as of others of the kind, dates from the time when the physicians were made supreme." The laboratory at Daldorf is large and well arranged; it consists of rooms for chemical (clinical pathology) and pathological study, well supplied with apparatus. The patients at Daldorf are nearly all chronic cases, though a few acute cases are admitted, and some here who are sent from the clinics to complete their convalescence.

In Berlin I also saw Prof. Mendel, who has a mixed out-of-door clinic for mental and nervous cases, and who is the editor of the *Neurologisches Centralblatt*, and one of the editors of the *Psychiatrisch-Neurologische Wochenschrift*. Both Professors Jolly and Mendel speak English fairly well, and the latter has visited America, attending the International Congress in 1887. From Berlin I went *via* Dresden to Prague and spent two days with Prof. Pick in his clinic, which is part of the large general hospital of Prague. This clinic is over-crowded, the buildings are old and badly furnished, but the work carried on is of an excellent character. The wards for the insane are over-crowded and some of the patients sleep on the floor. I saw here a relic of early days, a covered bed; it was not, however, in use.

Prof. Pick has four assistants and a laboratory assistant. The laboratory is small and poorly furnished, and, like the wards, reflected the niggardliness or poverty of Bohemia. The excellent work both from a clinical and pathological standpoint which has been done at the clinic of Prof. Pick is but another illustration of the fact that it is not the laboratory or its appurtenances, nor the well-equipped hospital, but the man or men engaged in the work,

which counts in the results accomplished. I saw with Prof. Pick and his assistants a large number of most interesting cases, and great pains were taken to demonstrate many of them to me. Prof. Pick does not live in the hospital, but visits it twice daily. He has a large general and consulting practice.

From Prague I went to Baden-Baden to a meeting of the Southwest German Alienists and Neurologists. Here I met some of the best known German alienists and neurologists, among others Kraepelin, Edinger, Hoche, Fürstner, Erb, and Hitzig. The meeting lasted two days, Saturday and Sunday, with two sessions, one morning and one afternoon of each day, and on Saturday evening an informal banquet was given in one of the rooms of the "Conversationshaus."

The papers and discussions at this meeting were all of a high order. I observed one notable departure from American methods at similar meetings. While each member who presented a formal paper had with him what appeared to be his manuscript, in most instances he paid not the slightest attention thereto, but gave rather an epitome of what he had to present. The freedom and directness in which the views of various speakers were disputed or contradicted by those who differed either with their methods or conclusions were refreshing, but did not appear to provoke the least feeling of personal animosity. By far the majority of papers were clinical studies, although some of the papers, notably one by Nissl, another by Edinger, and one by Kraepelin, were upon the results of laboratory work.

From Baden I went to Heidelberg, where I spent a week, returning again on my way south from Giessen for a stay of several days. The Heidelberg clinic is old, having been opened in its present building in 1878. It consists of a central building as at Kiel and Giessen for offices, laboratories, and lecture halls, etc., with wards running to the right and left. There are also wings running at right angles, and to the rear, connected by a covered corridor, are pavilions for the excited patients of each sex. A view of the front of this clinic is given in Plate LVI, which may be of interest to those who know of its wide reputation.

Prof. Kraepelin had for his associate and pathologist Prof. Nissl, and in addition three assistant physicians. The duties of these assistants are arranged somewhat as follows: A has charge

of the men's division for six months, and B of the women's for the same period, while C does laboratory or research work, as he finds desirable or necessary in carrying out the work of the clinic. At the end of six months A will go to the laboratory to work up material which has accumulated in his service, or to engage in research, while B takes his turn of duty among the men and C assumes clinical duties among the women. In this way each assistant has, in eighteen months, six months among men patients, six months with the women, and six months for laboratory work or other investigation.

There are also always at work in the laboratories from two to six special students, graduates in medicine, who do a certain amount of ward work, in the way of note taking, clinical and experimental laboratory work, and the like.

I first visited the clinic on a day on which there were no lectures, but Prof. Kraepelin showed me over the laboratories and the museum, which is not only devoted to morbid anatomy, but has a unique collection of the work of insane patients, showing in various ways their mental processes, and having a bearing upon the diagnosis. This work not only consists of specimens of handicraft, but writings and drawings, and even printed books. There is one large work in three or four volumes written by an insane physician, and based wholly upon his delusions.

The micro-photographs made by Prof. Nissl, which are arranged in cases and drawers about the room, and which are used by him to illustrate his lectures upon the normal and pathological anatomy of the nervous system, are particularly fine.

The clinical and pathological laboratory at Heidelberg is small and inconveniently placed. It was in the laboratory for physiological psychology that Prof. Kraepelin was manifestly most at home, and in which he was most interested. It consisted of three medium-sized communicating rooms opening out of the lecture hall. The laboratory was well supplied with apparatus, most of it of Prof. Kraepelin's invention, or modification, for research work.⁴

⁴From this laboratory were issued the well known "Psychologische Arbeiten"—since Prof. Kraepelin's departure for Munich, transferred to that clinic.

In this laboratory studies are made in normal, that is, in healthy persons as regards their "reaction time" as compared with the same observations in certain forms of mental or nervous diseases. Studies in fatigue under normal conditions, and in individuals who have taken alcohol, coffee, tea, etc., are made, as well as other experimental observations in physiological psychology.

This is not the time nor place to express an opinion upon the value of this work or to go into an elaborate explanation of its nature and extent. It is sufficient to say that we can only understand the morbid expressions of nervous activity, however manifested, when we understand and know the normal methods of nervous activity, and that these can only be approached through the methods of the laboratory or physiological psychology, and that wherever there is a collection of cases of mental and nervous disease there is a most inviting field for examination and study in this direction for the purpose of observation and comparison with similar studies made upon presumably normal individuals.

The clinical instruction given at Heidelberg is most thorough. It is conducted upon the same general lines as that given at Berlin and Kiel. In addition to clinical lectures in the lecture hall, to which patients are brought, there are clinical visits to the wards conducted by the director or one of his assistants. These visits are usually made by a class of from twenty-five to forty students. The lecturer passes from bed to bed or patient to patient and discourses briefly upon the characteristics of the case, the changes which may have occurred since the last visit, the treatment to be followed or which is being pursued.

As at Kiel, and subsequently at Giessen, I was struck with the number of patients in bed. Prof. Kraepelin, like Profs. Siemerling and Sommer, having to do almost wholly with acute cases, believes in the "bed treatment," upon which much *pro* and *con* has been written, especially in the German medical periodicals.

I am of the opinion that the practice in all of the clinics I have just named was based too much upon theory and too little upon the recognition of the needs of each individual case. I saw many cases in all of these clinics who I felt would be much better off in the open air. It takes, to be sure, a smaller number of nurses to supervise a ward full of patients in bed, than if half were in bed and half out of doors, but I was satisfied that the general appear-

ance of many pale, anæmic looking patients, and their general condition of body health would have been vastly improved by a few hours morning and afternoon in the open air and in the sunlight. There were other considerations looking to the unfortunate habits of some of the patients which it seemed to me would have suggested that they were better up and dressed.

I saw here, as at Kiel, patients of both sexes undergoing prolonged baths. These baths were given to control excitement, to treat bed sores, especially in paretics (some of whom I saw sleeping in the bath), and are in many instances of great value.

In addition to the clinical lectures and visits, Prof. Kraepelin gives on stated days didactic lectures on general psychiatry and upon insanity in relation to law and crime, forensic psychiatry.

I left Heidelberg impressed with the scientific zeal and enthusiasm of the director of the clinic and with the value and importance of his work and the great care taken in the accurate clinical study of cases and the recording of observations made.

From Heidelberg I proceeded to Frankfort-on-Main, where I saw Prof. Edinger, whom I had met at Baden, and he afforded me every opportunity of seeing his laboratory and the anatomical theater. The laboratory is simply furnished and constructed, but it attracts students from all over the world. Prof. Edinger himself is a most genial and attractive man, and did everything to make my visit interesting. He placed his entire collection of microscopical preparations at my service and personally showed me interesting details in some of the slides.

He took me into the anatomical theater and exhibited to me many things not only of scientific but historical interest. He kindly gave me a line to the director of the Asylum for Insane and Epileptics of Frankfort, where I spent a very interesting day, under the guidance of Dr. Sioli, the director. This asylum has about three hundred and fifty patients and an annual admission which, during the previous three years, had been four hundred and fifty-six, five hundred and eleven, and six hundred and twenty-two patients, respectively. This indicates very active work and keeps the small medical staff of the asylum fully occupied. There are three regular assistants and two volunteer assistants, physicians who work in the hospital for the clinical opportunities afforded. One of the assistants, but recently appointed, is a woman,

the first, I believe, in a German asylum. Dr. Alzheimer, the senior assistant, is the pathologist and also gives a tri-weekly course of lectures on the acute psychoses, illustrated by clinical material drawn from the wards of the asylum.*

The medical records were well kept and the histories well taken. The laboratory seemed deficient in apparatus and was not well situated, but the work which Dr. Alzheimer has done there has been a distinct addition to scientific psychiatry. I saw while at this asylum an autopsy upon a patient who had died that morning. It was most thoroughly performed and the comments made upon the condition shown macroscopically were of great interest.

Leaving Frankfort, I went to Giessen. I fortunately found Prof. Sommer at home and spent several days inspecting the clinic, listening to his lectures, examining the collection of illustrative photographs, charts, and drawings in the lecture hall, and investigating the apparatus and methods pursued in the laboratory. The clinic at Giessen consists of a central administrative building in which are laboratories, the rooms of assistant physicians, the office of the director, the lecture hall, rooms for out-patients, and a work room under the charge of a skilled artisan, where apparatus is repaired and new apparatus constructed. There are in addition, on either side, four separate structures for patients, one for the reception of new cases and for quiet cases, one for restless and suicidal patients, and one a single-story pavilion for excited cases. There is also on either side a separate building for private patients of either sex. There is in addition a central kitchen and a laundry and heating plant, and a commodious dwelling with tastefully laid out grounds for the director. The clinic at Giessen, like the ones at Kiel and Heidelberg, is at the extreme end of the town; beyond the Giessen clinic are open fields, and to the right as one faces the buildings lies the open valley of the Lahn. Opposite the clinic on the same street is the hygienic institute,

* Since my visit to Heidelberg and Frankfort, Kraepelin has been called to Munich to direct the newly erected clinic there, being succeeded at Heidelberg by Nissl. Alzheimer has been selected by Kraepelin to assume at Munich the duties performed by Nissl at Heidelberg. The reputation which Alzheimer has already attained, and his excellent work in arteriosclerosis, and studies of neuroglia, promise well for the future of the Munich laboratory and clinic.

and one or two squares nearer the center of the town lies the new medical clinic. These three institutions are all lighted by electricity from the plant of the medical clinic. The psychiatric clinic is surrounded by spacious grounds very effectively laid out and planted with trees, shrubs, and blooming plants. The outlook in every direction from the buildings and grounds over the valley and to the distant hills, some of them crowned with ruined castles, is most attractive.

The first floor of the main or central building is occupied by waiting rooms for out-patients, a porter's room, two or more spacious rooms which are used for out-patients, with all the modern apparatus for testing reflexes, disturbance of sensation, or motion, impaired vision, etc. Prof. Sommer is especially interested in physiological psychology, and in the laboratory devoted to this subject has conducted many valuable investigations. The apparatus, much of it very ingenious, is largely constructed after his own designs. On the second floor is the lecture hall, laboratories for clinical, pathological, and research work, the medical library, and the director's private office, which, as at Kiel, communicates with the lecture hall. Dr. Sommer is at present also the dean of the examining board of the university. Much work has been done at Giessen in photography and there is a large collection of lantern slides of pathological specimens, and of patients as well, and numerous stereoscopic photographs. Dr. Sommer has written a work on the *Methods of Physiological Psychology*, and also one on the *Diagnosis of Mental Diseases*, and Dr. Dannemann on the *Construction and Organization of Asylums*. Dr. Alber, the second assistant and pathologist, has also brought out an atlas of photographs to illustrate Prof. Sommer's work on *Diagnosis*.^a

Dr. Sommer, Dr. Dannemann, and Dr. Alber each take part in the lectures given at the clinic. The laboratory methods do not differ materially from those at Heidelberg. There are one hundred beds in the clinic, and the annual admissions are between two and three hundred. Among the patients in the excited pavilion I saw two or three criminals sent there for observation and report.

The methods at the clinic can perhaps best be illustrated by

^a There is regularly issued from the clinic the "*Beiträge zur Psychiatrischen Klinik*."

what I saw in the case of one patient. He was admitted on Tuesday afternoon and was examined and the history of the case taken by the third assistant. I was present and followed the methods of examination. On the following Thursday morning I went through the entire clinic with Dr. Sommer on a clinical visit. When we reached the pavilion where the new patient was, he was brought into a room set aside for the examination of patients, on a bed. The assistant who had taken the history then read the notes of the case and then Prof. Sommer took up the examination and dictated from time to time points which had been omitted or had not been made sufficiently prominent, or corrected the observations made by the assistant. Then everyone in the room, myself included, took the patient in turn and expressed our opinion or lack of opinion as to the diagnosis. The director entered into a brief discussion with each one in turn as to his views and in the end in this particular case left the diagnosis open as between hysteria, toward which the first and third assistants leaned, and organic brain disease, which all of us felt possible, but not clearly made out. This patient removed, another was brought in, and so on until all of the new cases were seen.¹

Prof. Sommer is an active genial gentleman and seems pleased to place before visitors all the resources of his institution. He stands very well with the Government and I was informed by residents of Giessen, seemed to be able to get anything he asked for in the way of financial support. This ability and the fact that others in similar positions have not been as fortunate in their appeals has caused some jealous feelings to arise.

From Giessen I went to Strassburg, where I spent a short time at Prof. Fürstner's clinic. This consists of a department of the large hospital and forms one of a group of several buildings, contiguous to each other and near the old fortifications, devoted to various departments of medicine and surgery. Prof. Fürstner kindly went about with me on the second day of my visit and gave me the advantage of a special clinical lecture on several very interesting cases. His senior assistant, Dr. Hoche, has since been called to Freiburg, to take the place of Prof. Emminghaus, who

¹ The methods of Prof. Sommer are to be studied in detail in his work "Diagnostik der Geisteskrankheiten."

had been compelled to give up his duties by reasons of serious ill health, and who had just been taken away for treatment when I visited Freiburg. The lectures being given when I was at Strassburg clinic were: Mondays, 6.30 to 8 p. m., Special Psychiatry; Wednesdays, 5 to 6 p. m., General Psychiatry. Psychiatric clinics, Mondays, Wednesdays, and Fridays, 5 to 6 p. m. Diseases of the Spinal Cord with Demonstrations, Tuesdays and Thursdays, 5 to 6 p. m. Work in the laboratory, Monday to Friday morning, under Prof. Hoche. The lectures and clinics were public, but the laboratory work was for special classes only.

The Strassburg clinic is old, not conveniently arranged, and the immediate surroundings not pleasant. I saw a few patients out of doors, but the area available for out of door exercise was limited and shut out from the surrounding view by high buildings and walls. The library of the clinic was large, but the laboratory lacked sufficient space. At Freiburg, in Baden, I saw little at the clinic of note. It is an old overcrowded building and quite out of date. At the time of my visit the administration of the hospital was crippled by the illness of Prof. Emminghaus, the director. I did not see the senior assistant, but was shown about by one of the juniors. There is a lecture hall here, supplied with admirable charts, models, and drawings, and some large photographs of patients in characteristic attitudes. There is also a Zeiss projection apparatus adapted also to micro-photography.

From Freiburg I went to Zurich, where my first call was made on Prof. Gaule the physiologist. He gave me the run of his laboratory, and both he and his assistants took great pains in showing me pieces of unique apparatus employed in physiological study. On the Sunday before I left home, Prof. Gaule had visited Sheppard and inspected our wards and laboratory. He had in the conference room given the assembled staff a talk of considerable length on his experiments on the effects of high altitude on the blood and on blood-pressure. For the purpose of these investigations he had made two balloon ascensions and since I saw him in Zurich he has made a third.

The insane hospital of Zurich, Burgholzli, has between three hundred and fifty and four hundred patients (December 31, 1900, 391; December 31, 1901, 360), and an annual admission of from two hundred to two hundred and fifty patients.

The medical staff of the hospital consists of a medical director and three assistant physicians. The director and senior assistant hold positions in the university, and lecture on insanity there, and at the hospital. The hospital dates back to the early sixties, and was constructed under the direction and somewhat after the plans of Griesinger, who held the chair of psychiatry at Zurich, from 1860 to 1864, when he was called to the clinic at Berlin. The buildings do not differ in their external appearance from that of the state hospitals erected in this country at about the same period. Internally there is more space given to associate dormitories than to single rooms, and the furnishing is quite meager as compared with our better state hospitals. Prof. Bleuler took me over the entire establishment and showed me under reconstruction some pavilions for excited cases which were very well arranged and will be, when finished, a great improvement on the conditions now in existence.

The teaching of mental and nervous diseases is divided at Zurich, Prof. Monakoff holding the chair of neurology and neuropathology. His clinic and laboratory attract a considerable number of foreign students, more indeed than the psychiatric clinic.

Going from Zurich to Paris, I visited La Salpêtrière and again saw the famous hospital, the site of Pinel's reforms in 1792, when he unchained the unfortunate insane there confined, and inaugurated simultaneously, with Tuke of York, England, but unknown to him, the era of humane treatment of the unfortunates. The Salpêtrière is a vast establishment giving shelter to some five thousand people, counting inmates and employees. It is exclusively for women, as Bicêtre is for men. There are wards for nervous diseases, for the insane, for sick, for surgical cases, for aged paupers, and for idiots. This hospital has been the field of much of the scientific work in psychiatry and neurology of Paris; and the publications which have issued from it and are still issued, and many of them of great value. Here Charcot made his name famous as a teacher of clinical neurology and the museum of casts, drawings, engravings, photographs and of anatomical specimens which he collected, is as grand a monument to his memory as the bronze statue in his academic robes, which stands before the entrance of the hospital in the shadow of the more pretentious monument to Pinel. Much good work and excellent teaching is

done at the Salpêtrière, and I came away from Paris with a strong desire to spend a few months rather than a few days within the walls of some of her hospitals.

I returned to London in time to visit Dr. Mott, and the laboratory of the London County Asylums at Claybury, and to run up to Edinburgh to the laboratory of the Scotch asylums, thence to Liverpool for a meeting of the British Medico-Psychological Association. The London County Council which through committees manage all of the asylums for the insane poor of London, some twenty thousand, has established in connection with the large asylum at Claybury, a laboratory under the direction of Dr. F. W. Mott for all the asylums, somewhat after the plan of the New York State Laboratory now connected with the State Hospitals on Wards Island, but intended for the benefit of the whole state hospital system. The Claybury Asylum has some two thousand patients under a medical superintendent, Dr. Jones, and six assistants. The committee of the county council is not a permanent committee and its members necessarily have no ideas of the principles which enter into hospital management. The superintendent at Claybury is handicapped by the same conditions which are responsible for the serious condition of affairs recently revealed in one of the asylums, under the control of the county council.*

The laboratory is a detached building with rooms set aside for pathological work, for microscopic study, for chemical work, and there is an attempt being made to fit up a room for physiological-psychology, some apparatus being already installed. Dr. Mott has been making a very interesting and valuable series of studies upon degeneration of nerves, necessitating the performance of certain experiments on animals. The anti-vivisection craze has taken such a hold on the English mind that numerous obstacles in the way

* Divided responsibility, no central authority backed by that of the governing body, a medical staff and subordinate officers responsible to the Council and therefore independent of the Superintendent, can but result in insubordination, in half-hearted obedience to the medical chief, or open contempt for his wishes, and as a consequence while the laboratory under Dr. Mott is all that could be desired, and the opportunities for good clinical work, in conjunction with the laboratory studies most excellent, such work is not forthcoming, and is not to be expected until the Council changes existing conditions.

of laws have been placed on the statute books which seriously interfere with perfectly legitimate and humane experiments. Dr. Mott has no license to undertake experiments on living animals, not even upon rats and mice, and the committee of the council having one member who is a strong anti-vivisectionist who controls the other members, Dr. Mott in consequence, is compelled to ask another man who has a license to do his experimental work for him while he looks on.

Entering the laboratory, the room to the left is the library and the director's office, to the right is the chemical laboratory and beyond a store room for chemicals and apparatus; back of the chemical laboratory is a long room well lighted from the north for the use of microscopes, adjoining which is a room for microphotography, and a dark room. Beyond these to the left is a room for section cutting, a large room for anatomical specimens and an autopsy room, and in front of this the room to be devoted to experimental psychology, which can also be used for lectures and demonstrations.

I was particularly interested in the chemical laboratory and in the results of some studies of the blood in degenerative brain and nervous diseases and of the blood and urine in epilepsy. If this chemical laboratory with the capable chemist now in charge, could work in conjunction with well observed cases in the wards, I believe much of value would result. There is some talk, I believe, of building a small detached observation ward and placing there competent medical men to work directly in conjunction with the laboratory workers.

Leaving London one Saturday night I spent Sunday at the Crichton Royal Institution, Dumfries, with Dr. Rutherford. This is a mixed asylum receiving both public and private patients, but keeping the two in separate buildings and with distinctly different standards of care. There are in connection with this institution three separate cottages in the immediate vicinity of the main building accommodating from four to twelve patients each and since the visit I paid the institution in 1896, Friars Carse, the home of Mr. and Mrs. Crichton, who founded the institution, has been purchased. This house, is part of it, very old, having been part of an old priory. The mansion is eight miles from the institution and is looked after by a lady matron, who with two or three nurses

care for the four to six lady patients who reside there. A staff of house servants look after the cooking and care of the rooms. The grounds of this mansion are very spacious and beautifully laid out. I had in addition to the visit to the Crichton Royal Institution in 1896, twice before been Dr. Rutherford's guest, once in 1882, at Lenzie where he had organized the Barony Parochial Asylum of Glasgow, and for years conducted it on the open door principle, and again at Dumfries, in 1890.

Dr. Rutherford translated Griesinger's work from the German for the New Sydenham Society in 1867.

On Monday I went on to Edinburgh and again visited the Morningside Asylum, which I had seen in its old condition in 1882, in the process of reconstruction in 1890, and completely transformed in 1896. The central note of the new Morningside Asylum is its grand hall from which open on either side the wards for men and women. This hall occupies two floors in height and is built to resemble a grand baronial hall of some ancient castle. It is so spacious that its height is not remarked. On either side are large open fire places and from each end open billiard, card, reading, and writing rooms where patients can withdraw from the general assembly in the larger hall.

This hall is used as the general reunion room every evening and is open to any who wish to go there when in-doors during the day. On either side of this hall is a hallway one for men and one for women leading to the dining rooms which are just back of but entirely cut off from the hall. These dining rooms are divided so as to accommodate but few patients in each one, and each dining room communicates with the common service pantry which is just over the kitchen which is in the high basement below, an arrangement which is made possible by the fall of the ground level. On the same level with these dining rooms but approached from a private entrance is the dining room of the assistant medical staff. Dr. Clouston like Dr. Rutherford has his own house on the grounds. I visited the kitchen which is most conveniently arranged and is supplied with apparatus of the most modern kind. The cooking is done by gas or steam. From the level of the Kitchen floor a tunnel passes to the detached villas, to the hospital buildings, there being one for each sex, and to the pavilions for noisy patients. The food is carried to these on a tram-way in a

tight, rapidly moving car and there are ward kitchens with small gas ranges in each of these buildings, but the patients welcome the time when they can return to the main dining rooms, and the physician, matron, and chef all told me that the difference in waste and economy in serving in favor of the central kitchen and contiguous dining halls was very great.

Dr. Clouston whose well known work on Mental Diseases has just reached its sixth edition, is professor of Mental Diseases in the Edinburgh University, and was for a long time one of the Editors of the Journal of Mental Science, the official organ of the British Medico-Psychological Association.

While in Edinburgh I visited, and saw the work of the laboratory of the Scotch asylums, under charge of Dr. Ford Robertson. This laboratory is supported by contributions from the several Scotch asylums and does for that part of the United Kingdom what the laboratory at Claybury does for the London asylums.

Dr. Robertson has an assistant as has Dr. Mott, and graduates and advanced students are permitted, under certain restrictions, to work in the laboratory under the supervision of the director. Dr. Robertson has written a work of much value on the Pathology of Insanity and was engaged at the time of my visit in studies in the bacteriology of certain conditions associated with insanity, notably in paresis. Dr. Watson, a volunteer assistant in the laboratory was pursuing some very suggestive and interesting work in comparative neuro-pathology, and seemed to be in the way of throwing some light on the causes of arterio-sclerosis.

I do not think that any one of sufficient experience and observation in the care of the insane and the conduct of institutions for the insane, to be able to judge, could visit the institutions which I have referred to, and which I saw without being struck by a notable contrast between the public hospitals of continental Europe on the one hand, and those of Great Britain and the better state hospitals of this country, on the other.

In Germany the smaller institutions and especially those more recently constructed, are more simple in their style of architecture, less elaborate in their general arrangements, than are the older and the larger institutions of which Daldorf near Berlin, the Municipal Hospital in Frankfort, and the hospital near Zurich are examples, and much more so than are many of the better

known hospitals and asylums of Great Britain and the United States.

It must not be understood that these small institutions, the ones at Kiel or Giessen for example, are erected without great attention to detail in construction and arrangement or that they are the simple and inexpensive structures which some who have read of them or heard them described seem to believe.

No one can talk with Prof. Sommer at Giessen, who is familiar to the most minute detail with the plans and arrangements of that clinic, its furnishing and equipment, without being at once convinced that he felt it necessary in the work which he proposed to undertake to have a hospital constructed upon lines which should make it easy of administration and as perfect as possible in those details which tend to make the many and somewhat intricate affairs of hospital management move smoothly and harmoniously together.

Kiel and Giessen may be taken as examples of recent ideas in small hospitals or clinic construction, and in many respects resemble each other.* Each has a central administration building in which are the offices of the medical director, the apartments of assistant physicians, rooms for the reception and examination of patients not resident in the clinic, laboratories, library and conference rooms, and a lecture hall. On each side of this, attached at Kiel, detached at Giessen, are wards for quiet patients and reception wards for new cases and at each there are detached buildings for pay patients and for the excited cases. All of the details, even to materials for floors and walls, have been carefully thought out under medical direction and in every respect the arrangements as originally planned were such as met the approval of the medical director and seemed to him best adapted to the situation. At Giessen even the furniture was constructed under the director's supervision and from models he had had constructed. Dr. Sommer showed me some of these models with much pride. I did not find the arrangements and construction of the clinics in every respect such as would be approved in this

* Since my visit to these clinics the new clinic at Munich, erected at a cost of over half a million dollars, to accommodate about 100 patients, has been opened, and Prof. Kraepelin has been called to its directorship.

country even for public patients, and for private patients they would not meet by far the demands of the day. We must remember, however, that these institutions are built for people whose manners and customs differ in many essential details from our own, and for them they seem to meet very well the requirements.

The buildings at Kiel though not fire proof are very substantially built, with, as I have said, somewhat particular attention to minute details of construction which would only be thought of by one versed in the necessities of hospital care and administration and construction. The cost of these buildings is fully up to the cost of somewhat elaborate fire proof structures in this country when one takes into account the differences in the price of materials and labor. The average cost of all of the buildings at Kiel was about thirteen cents per cubic foot. The cost per bed was slightly over \$2235.00. The cost of similar construction in this country would be little if any more and with a proportionate larger expenditure represented solely by the differences in the price of labor, fire proof construction, more modern plumbing and greater attention to detail in finish would have resulted. The grounds surrounding the clinics at Kiel and Giessen, and I take these two as examples of the recent trend of opinion in hospital construction in Germany, are tastefully laid out, and planted with shrubs and trees evidently under the direction of a careful and tasteful landscape gardener. When therefore we are told or it is intimated that the newer German psychiatric clinics are simply and inexpensively built and with little or no attention either to architectural effect or exterior adornment in the way of pleasure grounds and the like we are asked to believe something which is contrary to observed facts.

When one takes into account the differences in the general construction of buildings, and the manner of living in continental Europe and the methods of this country and Great Britain we can safely say that as much attention is paid to what some critics of our hospitals and asylums are inclined to call unimportant details, in Germany as in America or England.

The remarkable contrast to which I refer is not, therefore, in the material structures in which hospital work is carried on, but in the nature of the work conducted and in the point of view from which patients are regarded.

It has been asserted that with the completion of the clinic at Kiel, every university town in Germany has a psychiatric clinic. Now these university towns are not by any means, all of them among the most populous or most important towns of Germany, nor is the territory surrounding them more thickly populated. Kiel has a population of 98,000, Giessen of 23,000, and Heidelberg of 35,000, and there is no more demand in these towns and others which I could name for a clinic for the immediate and convenient care of the insane than in many other towns and cities and not so much as in several. The location of these clinics in university towns cannot, therefore, be explained solely or largely upon the plea of greater necessity. The object and the admitted object is to afford material for teaching psychiatry to students and material for study and observation on the part of professors connected with the universities. This being true one is not surprised to find that patients are regarded and to some extent seem to regard themselves as "mere cases" for demonstration and study. I do not mean to imply for a moment that the directors of these clinics or their assistants are callous and indifferent, but I do assert that the rights and feelings of patients in the clinics which I visited are not as thoroughly regarded as in Great Britain or in this country. Part of this is due no doubt to the fact that the majority of the patients in these clinics, in some of them all, are paupers, that doctors and nurses on the one hand and patients on the other, are influenced consciously or unconsciously by the spirit of militarism which pervades Germany, and impresses upon the so-called lower orders respect for position and authority which is certainly not observed on this side of the water.

I am unable to assert that the patients resented being taken before classes or having classes brought to their bed-side nor do I think that any were materially harmed by the excitement or possible embarrassment resulting. Some seemed to enjoy it, but the reasons for the pleasure excited were of a kind associated with the ideas of the patient which were in consequence made more prominent and possibly dominant.

The thing, therefore, which strikes the student in visiting the German psychiatric clinics is the care and zeal expended in the study of cases and in the study of the general and special problems of psychiatry.

In the first place, and of prime importance the preliminary training and medical education of the German physicians whom I met and who are engaged in the study of psychiatry generally, has been conducted on a different plan from that pursued either in this country or Great Britain. In consequence the medical officers of the German psychiatric clinics are better equipped to undertake strictly scientific studies than are the majority of physicians in like positions in this country or indeed in Great Britain. Then, moreover, the psychiatric clinics are as I have pointed out, associated with universities and their directors, and in some instances assistant physicians are members of the teaching body of the universities, and by reason of contact with the university staff and the knowledge that some at least of their work will be reviewed by their colleagues, are stimulated to their best endeavor.

In the larger hospitals for the insane to which the clinics transfer their chronic cases and those whose convalescence promises to be slow, there is less of this spirit of inquiry, less careful study of cases, though much good clinical and laboratory work is done in these institutions.

The study of psychiatry in Germany is comparatively a new field in medicine. It is not many years since the care of the insane in that country was a reproach to the intelligence of the Germans. Heinroth was in 1811, made the first professor of psychiatry in Germany, at Leipzic. He had been a pupil of Pinel in Paris, and was the most earnest advocate of the study of insanity as other symptoms are studied and its introduction in the curriculum of the medical schools. Unfortunately for his plans the congress of Vienna made a new distribution of German territory and the revenues were not available to carry them out. He took up the practice and teaching of psychiatry at a time when there was a very serious necessity for reform in German hospital methods. Reil, whose writings did much to hasten an attempt at reform in Germany, said of the institutions for the insane, "They are mad-houses not merely by reason of their inmates, but more especially because they are the very opposite of what they were intended to be."

The German institutions under the force of enlightened views upon insanity gradually improved, but any one who will take the

pains to read the account of the visit of the late Dr. Pliny Earle to German asylums in 1849," will at once realize the great advance which has been made since that time.

Conolly, in 1839, had abolished mechanical restraint at Hanwell, and his example was being widely imitated in Great Britain, and yet Dr. Earle reports restraint in common use, and restraining apparatus of the most ingenious kind. I cannot refrain from quoting Dr. Earle's naïve comment on a most complex tranquilizing chair which he found in use; he says: "We advance no pretensions to inventive genius, but really it appears as if there were one thing wanting to make the chair just what it ought to be; and this is—to heat it a few hours in the midst of a large and brisk fire." So slow indeed was the non-restraint idea in gaining ascendancy, that as late as 1863, Neumann speaks of it as the "English swindle" and Erlenmeyer in the *Correspondenz Blatt*, for April, 1863, repeats the phrase.

In 1845, the first edition of a work on insanity by Griesinger, entitled "The Pathology and Therapeutics of Psychical Diseases," was published and a man appeared before the medical profession already well known for much good work he had done in the seven years which had elapsed since he took his degree, who was destined to work a revolution in German psychiatry. The time it is true was ripe. The disciples of Pinel and the followers of Esquirol in France, and many in England had been teaching that insanity was a symptom, dependent upon physical causes, and that the brain was the organ affected and that insanity was to be studied just as other symptoms were studied, by close accurate clinical observations coupled with post-mortem investigations, and that nothing was to be gained by abstruse discussions from a meta-physical standpoint, as to the action of the mind and the nature of the mental processes.

Heinroth, who was the leader of those who held that insanity was distinctly a spiritual disease, "beginning as vice" had but recently, 1843, died, but his school still had many adherents. Two other leading views were held, one school was called the Somatics,

²⁰ Institutions for the insane in Prussia, Austria, and Germany by Pliny Earle, M. D., Utica, N. Y., 1853. American Journal of Insanity, Vol. IX, pp. 106-224-305; Vol. X, pp. 1-135.

of whose teachings Jacobi was the most prominent exponent, and the other the Psycho-somatics with Zeller as their leader. It was under Zeller at Winnenthal, that Griesinger had his first experience in the study of psychiatry and the care of the insane, and it was here during the two years of his service, 1840-1841, that he collected the material for the first edition of his work.

Zeller was a man of remarkable force and wide reputation, and he maintained a warm friendship and admiration for his distinguished pupil. While classed as a psycho-somatic, he evidently had a strong belief in the physical basis of insanity. In his writings such phrases as the following frequently appear: "The bodily lesion which lies at the basis of the mental disorder."

Griesinger in an address in 1863 in opening his clinic at Zurich said: "*To determine not merely the character of the mental aberration, but so far as possible, the nature of the lesion of the brain and nerves; this is the real problem for solution, the special business of diagnosis in insanity.*"

In the *Archiv für Psychiatrie und Nervenkrankheiten* No. 1, 1867, he published a paper which marks an epoch in German psychiatry, and nothing that has been done since, has risen above the high mark which he then fixed as the one to be attained.¹¹ He was met with violent opposition and even personal abuse. The leading periodicals devoted to mental and nervous diseases, denounced his views or asserted that they contained nothing new but they outlined the plan now in operation in Germany, and one attentively reading the essay, and comparing it with some published articles and addresses which have appeared during the last five or six years can but wonder if its existence was known to the writers and speakers. Dr. Sibbald the translator in the *Journal of Mental Science*, of the article just referred to, in an article entitled "Psychiatry in General Hospitals,"¹² says: "The position which Germany has made in providing for the clinical teaching of psychiatry is chiefly due to the impulse which Professor Griesinger gave to the movement during the three years in which, before his lamented death in 1868, he filled the chair of Nervous and Mental

¹¹ For a translation of this article see *Journal of Mental Science*, April, 1868. *American Journal of Insanity*, July and October, 1903.

¹² *Review of Neurology and Psychiatry*, Vol. I, No. 1, January, 1903, p. 11.

Diseases in the University of Berlin. I visited Berlin a few years before his appointment, and saw the building attached to the Royal Charité Hospital in which the insane were located, and when restraint and seclusion and all the worst features of the old asylum treatment were rampant. And I remember with what delight I saw the same building in 1867, under Griesinger's régime. The change was like a miracle; and in recalling to mind what I saw there and what I thought of it, I feel that I did not adequately realize how much that great man was in advance of his time; for there was little either in the treatment of the patients, or in the mode of conducting the teaching, that was in any way behind the best that is to be seen at the present day."

The distinguishing feature of the German clinics is their resemblance to a general hospital in methods, and this is the lesson to be learned by those who visit these clinics. All that medical science can offer is brought to bear in investigating the pathological conditions present, both by careful systematic clinical work and painstaking laboratory investigation.

The patients have the advantage of well trained internes, and the fact that their patients are to be the subject of clinical lectures, stimulates these internes to a most thorough study and record of all physical and mental symptoms, lest, when the case is brought before a class, they be found to have been deficient or careless in their observations.

The nursing in the clinics which I visited did not impress me as being up to the standard of the better public hospitals for the insane in this country, nor did the nurses appear to be as alert or intelligent. As to the methods of treatment, aside from the almost universal use of baths and other hydrotherapeutic measures, they did not differ materially from what can be seen in any good hospital for the insane. Prolonged baths, to calm excitement, to prevent or relieve bed-sores in patients were in common use, and with simple, sometimes meager or almost crude methods and apparatus, much was accomplished by these baths. The use of hydrotherapy, and more especially prolonged bathing has had, like many other therapeutic procedures, a curious periodicity. About 1847, Brierre de Boismont," reported the use of prolonged,

"Mem. de l'Acad. de Med., Paris, 1847.

six to ten hours, warm baths in calming maniacal excitement. He was followed by other writers and observers, and for a time the method was in more or less general use. About 1863-65, attention was again called to the use of prolonged warm baths, with various modifications and again in 1882-83.²⁴ The period has again come around and a method which has undoubted advantages, and only passed into abeyance because introduced, exploited and used with more enthusiasm than good judgment and discrimination is, or rather has been, for a few years past growing in favor.

The advantage which German physicians have over those whose education is obtained in this country, as regards their training in phychiatry, lies in the didactic and especially the clinical instruction which can now be obtained at all the German universities.

I have already pointed out that the *raison d'être* of the psychiatric clinics in German university towns is not to afford prompt and efficient relief to the unfortunate insane, so much as to afford material for clinical instruction. This object being accomplished the other result necessarily follows, for no patient in any hospital for the insane that I am familiar with receives such careful clinical study as does the patient in the better known clinics, such as Berlin, Kiel, Heidelberg, Giessen, not to mention the many others. Moreover, under the enlightened laws of Germany, his admission to the psychiatric clinic is practically as easy as would be his admission to the neighboring medical or surgical clinic, and such is the public respect for and confidence in the direction of the clinic that questions of improper detention are as unheard of concerning the patients under care for mental disturbances, as they are concerning the patients in any of the other clinics, and the clinics are applied to by patients or their friends with almost equal freedom.

The wish has been expressed by many that clinics of a similar kind might be had in this country; and the statement made that every town of a certain size should have its psycho-pathic hospital.

²⁴ For an account of the value of permanent bath in the treatment of gangrenous bed-sores in Paretics see *American Journal of Insanity*, April, 1883, by D. C. Rheinhard from *Allg. Zeitschrift für Psychiatrie*, Bd. XXXIX, Heft. 6.

This cumbersome and by no means pleasant sounding title has been proposed with the belief that patients going to an institution with such a title would be relieved, in part at least, from the stigma that is supposed to attach itself to them and their families if they are treated in a hospital or asylum for the insane.

I am decidedly of the opinion that no subterfuge of any sort ever succeeds in preventing the curious, and the busy-bodies of every community, and the yellow journals of a few, from knowing and publishing either by gossip or in print why their neighbors were taken to the hospital and the very attempt to conceal the character of the hospital under some new name awakens suspicion that there is something to conceal about the character of the diseases it treats.

The German clinic is frankly called, *Irren-klinik*, or *Psychi-atrische-klinik* (insane or psychiatric clinics) and do not appear to be avoided because of the name. But questions of this kind aside, until the government and the medical direction of the clinics or hospitals it is desired to establish, can be assuredly and forever freed from the baneful influence of politics it will be a hopeless task, bound to dismal failure, to attempt to imitate the German clinics or to approach them in the work which they are accomplishing for the public and the profession. What city for example would be expected to build and make annual appropriations for a hospital or clinic like that at Kiel or Munich, without naming its managing or directing board? What board so named, judging by past experiences, would be likely to appoint the best man to be found, no matter what state or city he happened to reside in, as the medical director and then leave his hands wholly untrammelled as to his staff, and the general direction of the hospital?

Are not the advocates of a clinic in every city of a certain size familiar with the history of the medical and other appointments in many of our state and municipal hospitals? Is the example of Runge forgotten, driven out of a hospital whose internal administration he had reformed and whose medical administration he had made a credit to the city and state, by the demands of party spoilsmen? If anything can be done, until the barbarism of our system of so-called self-government is overcome, it must be accomplished by or in connection with the few universities with associated medical schools and hospitals. In no other way under

present conditions could the tenure of office of the medical director be assured, in no other way could the expectation be raised of the selection of the best available man or men to carry on the work.

The demand for clinical instruction in psychiatry in this country, is a crying one, and those who know the situation and who have

**INSTITUTIONS USED FOR CLINICAL TEACHING OF MENTAL DISEASES
IN CONNECTION WITH GERMAN AND THREE OTHER
UNIVERSITIES, A. D. 1900.**

Names of Universities.	Wards from part of General Hospital.	Independent of General Hospital.			Classes of Patients provided for in the wards.				Average sojourn of Patients.		Number of Physicians.		Date of Opening.	
		Close to other Cliniques.	Within a mile of other Cliniques.	Beyond a mile from other Cliniques.	Recent Insanity.	Both Recent and Chronic.	Delirium.	Other Nervous Diseases.	Years.	Weeks.	Non-Resident.	Resident.	Of present Building.	Of regular Clinique.
Berlin.....	1	1	..	..	68	..	26	60	..	..	..	10	1798	1898
Greifswald...	..	..	..	..	..	48	..	..	..	18	..	..	1894	1899
Kiel.....	..	..	..	..	..	80	..	..	..	..	..	..	1900	1900
Göttingen...	..	..	..	..	..	845	..	..	..	..	..	..	1898	1898
Tübingen....	..	1	..	..	114	..	..	..	..	..	..	..	1894	1894
Rostock.....	..	..	1	..	..	200	..	..	..	..	..	..	1896	1896
Erlangen.....	..	..	1	1	..	857	..	..	..	..	..	..	1848	..
Heidelberg...	..	..	1	..	80	..	..	..	..	..	..	..	1878	1878
Marburg.....	..	..	1	1	..	800	..	..	..	..	..	..	1878	1878
Freiburg.....	1	..	1	..	..	90	..	..	1	..	..	..	1887	1887
Breslau.....	1	..	..	..	215	..	..	..	..	10	..	..	1897	1877
Strassburg...	1	..	..	..	70	..	..	80	..	11	..	..	1896	1872
Würzburg....	..	1	..	..	60	..	..	..	..	12	..	..	1898	1898
Gießen.....	..	..	..	..	60	..	..	..	..	19	..	..	1896	1896
Jena.....	..	..	1	..	180	..	..	..	..	20	..	..	1879	1848
Leipzig.....	..	1	..	..	180	..	..	25	..	9	..	..	1892	1892
Halle.....	..	..	1	..	100	..	..	20	..	..	..	..	1891	1891
Bonn.....	..	..	1	..	..	600	..	..	1	16	..	..	1892	1892
Königsberg...	1	..	..	..	80	..	10	..	..	7	..	..	1879	1892
Munich.....	..	..	..	..	..	680	..	..	2	12	..	..	1899	1891
Vienna, 1.....	..	..	..	..	..	800	..	..	..	44	..	..	1898	1893
Vienna, 2.....	1	..	..	..	180	..	..	..	..	4	..	..	1794	1873
Prague.....	..	..	1	..	168	..	..	..	..	18	..	..	..	..
Copenhagen..	1	1	..	..	64	..	..	..	..	3	1	2	1868	1862

seen what is done elsewhere long for the day when the material all about us may be made available, a day the dawn of which will be for the lasting benefit alike of the insane, and of those who would study and treat their maladies.

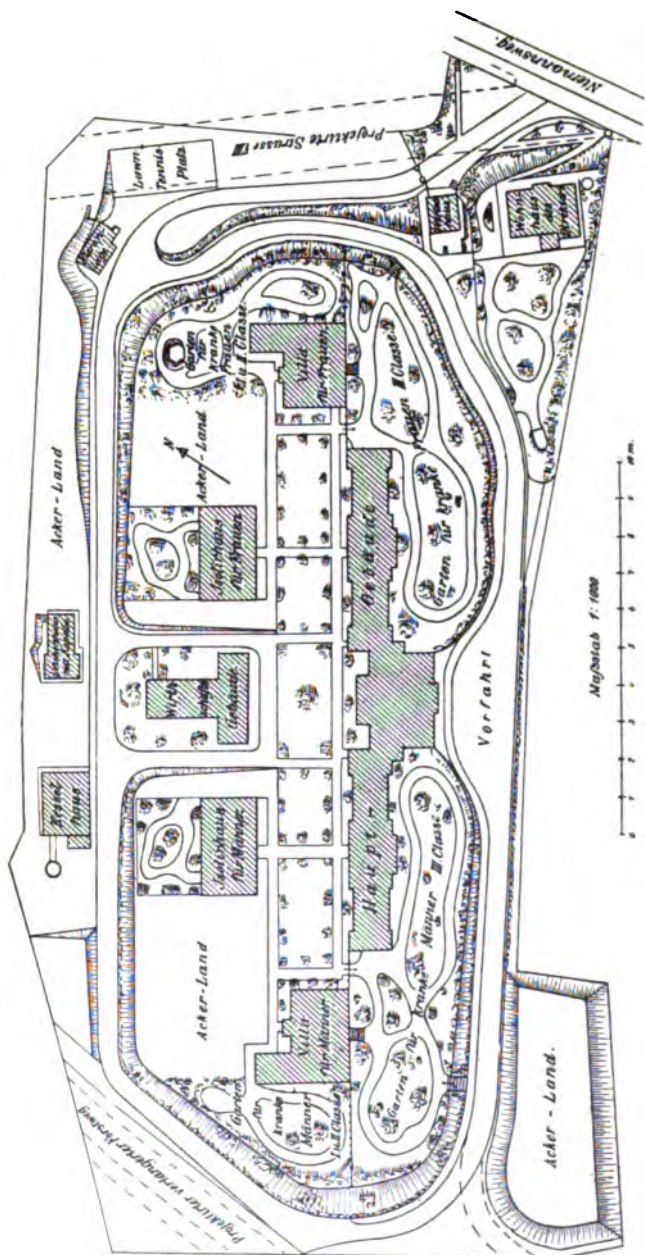
To confess that that dawn seems far off, and that it is delayed by the clouds of political ignorance and political vice which over-

shadow so many other things which might work for the healing of the nation is humiliating, but the truth compels the admission.²⁸

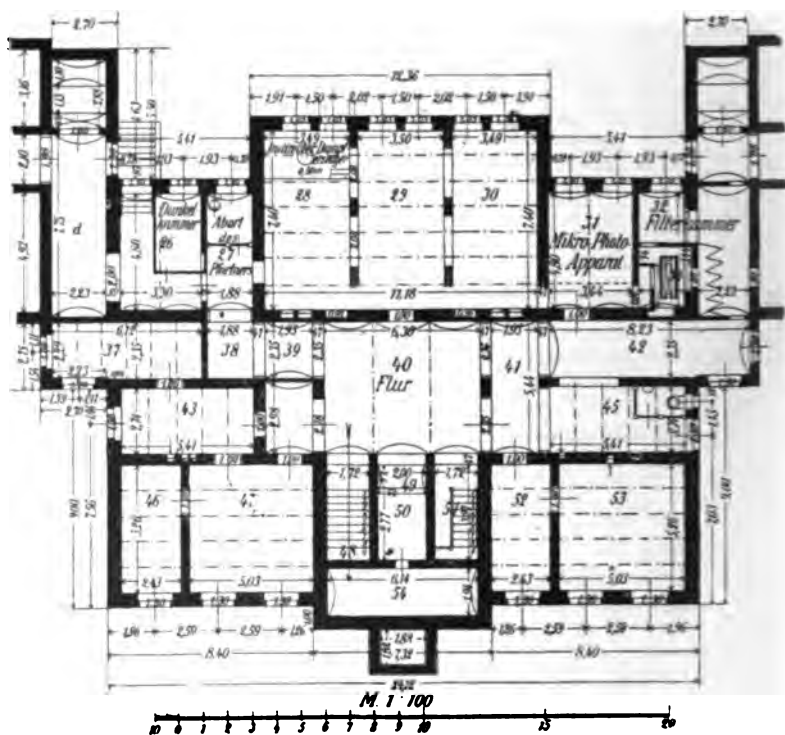
The foregoing table, taken from Dr. Sibbald's article in the *Review of Neurology and Psychiatry* (Vol. I, No. 1, January, 1903), is reproduced as giving in a concise form information as to the work and character of the German psychiatric clinics. The reference to Kiel in the table is slightly incorrect as it provides for one hundred and thirty-nine, rather than eighty patients, and was not opened until the autumn of 1901. Heidelberg also has over one hundred beds. Since the table was published the new clinic at Munich has been opened under Prof. Kraepelin, as stated in the foregoing pages.

²⁸ Read by title at the Sixtieth Annual Meeting of the American Medico-Psychological Association, St. Louis, Mo., June 2, 1904.

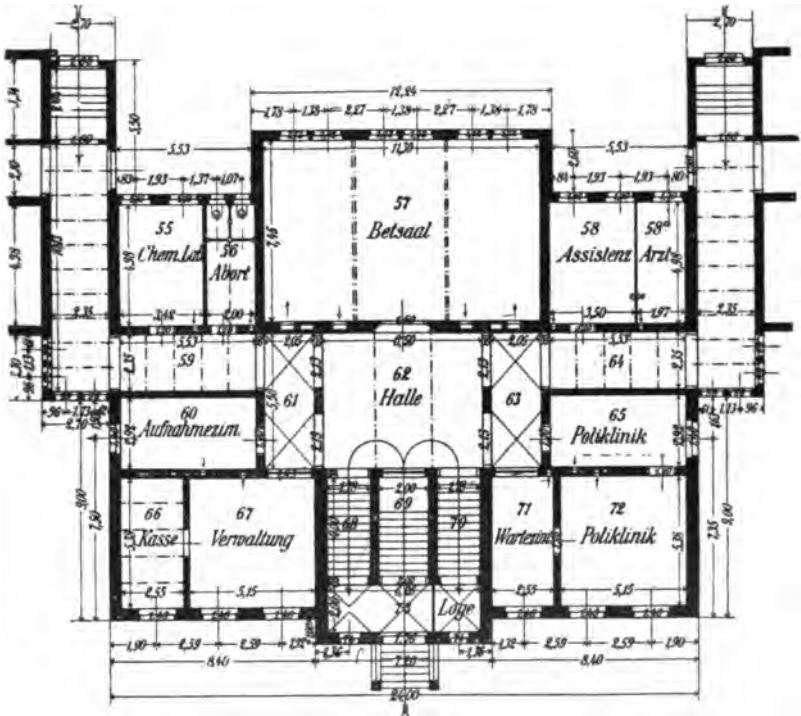




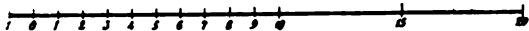
KIEL.—GROUPING OF BUILDINGS.



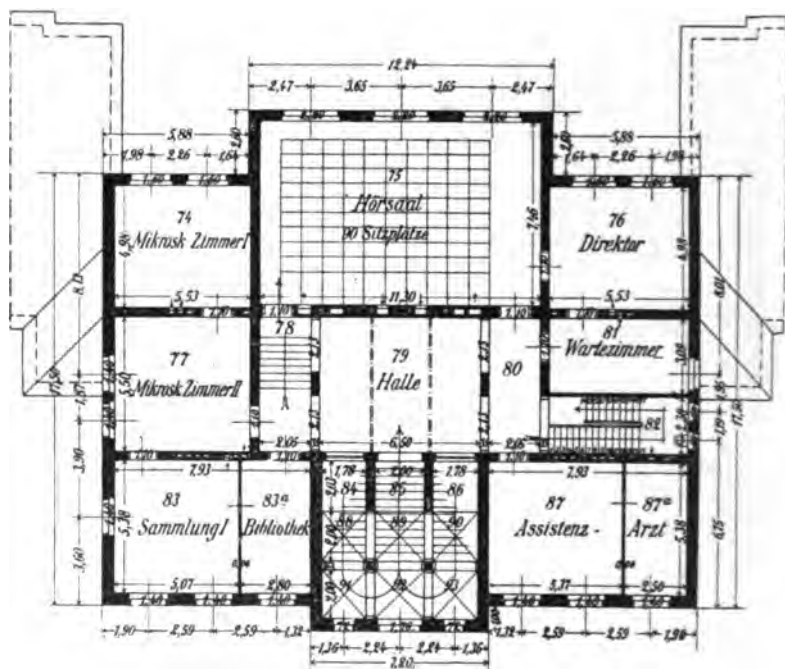
KIEL.—BASEMENT PLAN, ADMINISTRATION BUILDING.



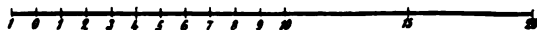
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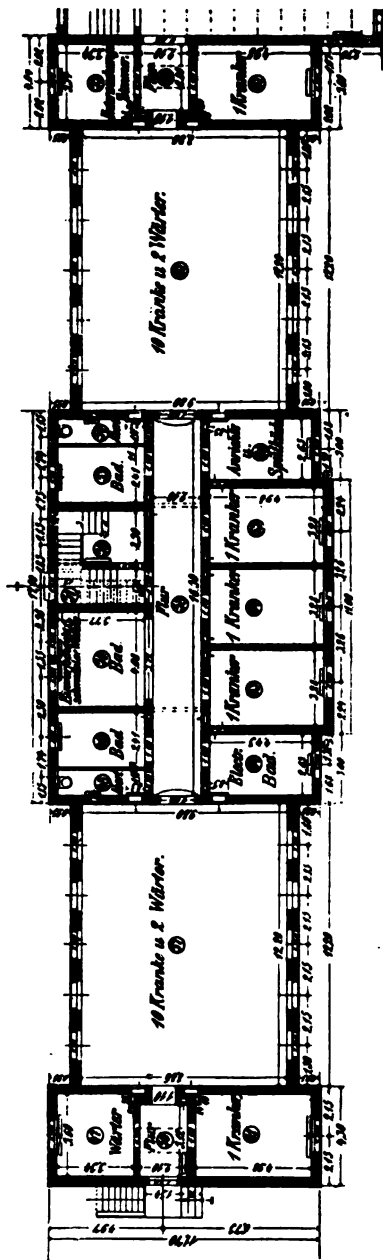
KIEL.—GROUND FLOOR, ADMINISTRATION BUILDING.



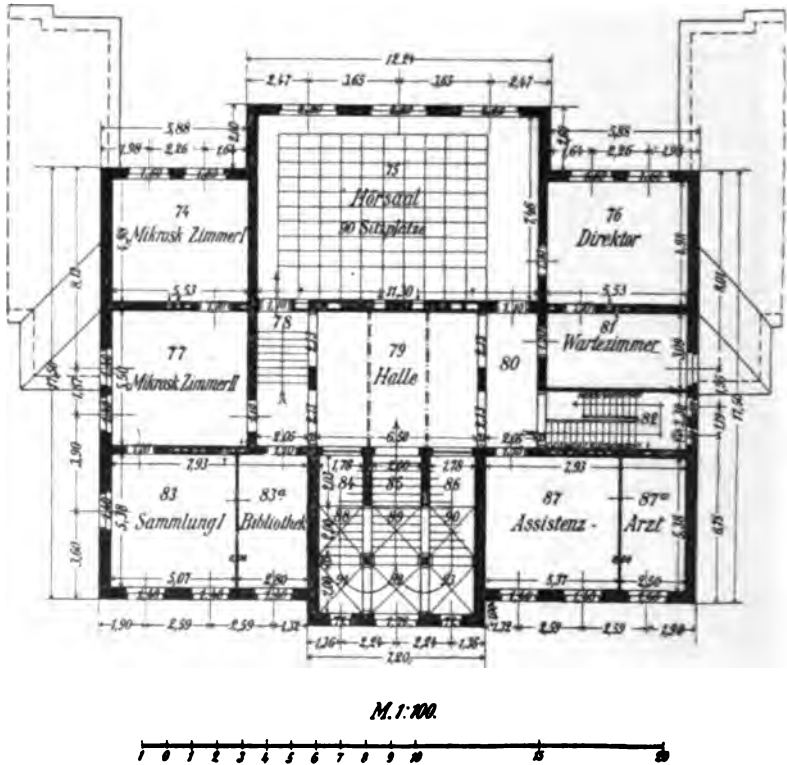
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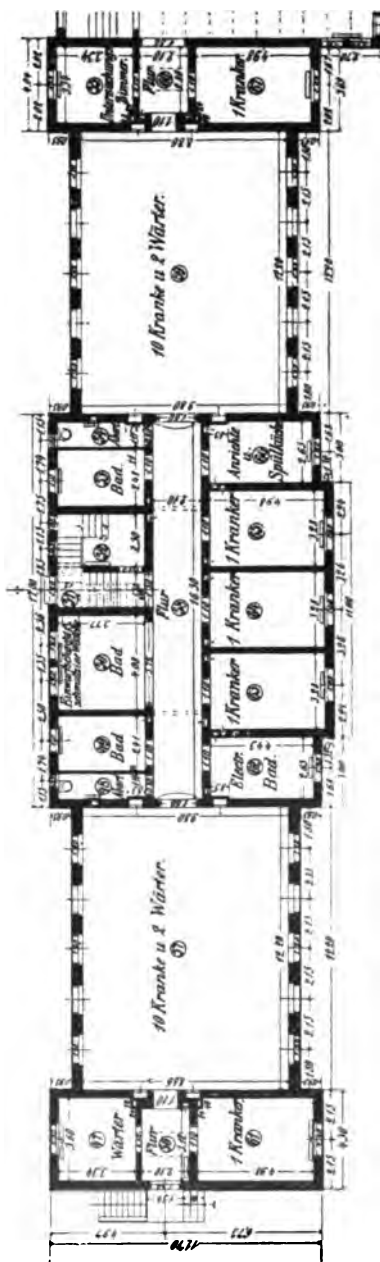
KIEL.—SECOND FLOOR, ADMINISTRATION BUILDING.



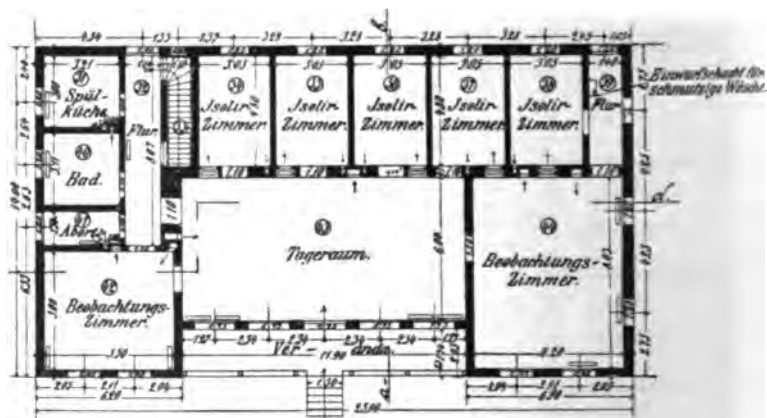
KIEL.—WARDS ON EITHER SIDE OF ADMINISTRATION BUILDING.



KIEL.—SECOND FLOOR, ADMINISTRATION BUILDING.



KIEL—WARDS ON EITHER SIDE OF ADMINISTRATION BUILDING.



KIEL.—ISOLATING WARD.



HEIDELBERG PSYCHIATRIC CLINIC.



FUNCTIONAL INSANITY AND ITS RELATION TO ALLIED NEUROSES.

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It requires courage, if not daring, to advance at this stage of neurological research and knowledge—the view that many of the morbid mental conditions known as insanity are functional, and that therefore there are diseases of function as well as of organs. I expect this theory to meet with much adverse criticism—possibly with a severe rebuff. For these I am prepared, but to avoid misapprehension I request permission at the outset to define my terms—always a risky procedure, for it is said that by defining one erects an idol with special qualities and which invites by these qualities its own destruction. It is also said that the idol of to-day becomes the object of contempt tomorrow. Definition is, however, a convenience, for only by this means can we group allied symptoms, note their relations and sum up our knowledge.

By function we mean the work done by or the action of any organ or set of organs, and among these organs we include the “independent protoplasmic unit”—the neurone. The work of these neurones varies in quality and intensity. Their energy can vary with a suddenness which appears to preclude any organic change. We know, and it is proved both by experience and disease that the various organs of the body receive their direction, tone, and support through the neurones from the central nervous system, and although we are accustomed in disease to find structural alterations which account for the morbid phenomena, yet nature may, on occasions, experiment in so subtle, fine and obscure a manner as to alter the function without leaving any evidence of definite or appreciable change in structure. We meet with both men and women at all ages whose lives are a misery to themselves, a cause of distress to their relations and who suffer from perverted sensations or anæsthesias, paræs-

thesias, and dys-æsthesias, from pains or algesias, from loss of power or paresis, from various affections of the sense organs and even from mental abnormalities, yet who have no discoverable nervous lesions to account for these symptoms, and whose lowered vitality and consequent incapacity can only be described as "functional."

These functional diseases—also termed dynamic or vital as opposed to those of a physical or material character—are in contradistinction to organic or lesional diseases. We are acquainted, for instance, with tumultuous cardiac disturbances following upon a shock of surprise or associated with emotions of fear; with respiratory disturbances—familiarily described as "taking the breath away"—after startling sensations. We find albuminuria without disease of the kidneys, and mental perversion accompanying bodily disorders, without any definite structural brain disease. The mental irritability and the impulsiveness of cardiac (more especially of aortic) disease, the buoyancy and hopefulness evidenced in cases of tubercular phthisis and the different mental states accompanying digestive troubles or disorders of nutrition are so well known that the maxim "The stomach rules the world" is a true word spoken in jest. I need but refer to the mental states associated with gout and other metabolic changes to emphasize my theory that there are many and varied mental abnormalities without definite structural brain lesions, *i. e.*, that there are diseases of function as well as diseases of organs.

As to the definition of insanity, it is not in itself a disease, but a symptom which may be due to many different morbid conditions. It had been defined negatively as a condition opposed to sanity, and this is the view we shall adopt as being sufficiently comprehensive to include every variety. We know that the standard of mental health is a variable one, so much so, that one may safely say that nobody is always sane. The age of the individual, the period in which he lives and the class of society to which he belongs all have to be considered. There is a different standard of mental health, as possibly there is of honor and morality and certainly of custom and social usage for each class of society and in each social *stratum*, and therefore so many different degrees of insanity; so that insanity becomes a

want of conformity with an artificial code. We know, however, that the social regenerator, the man of genius, the statesman and the poet are all out of harmony with their surroundings, yet the term insanity can hardly be taken to describe their mental life. Moreover the criminal, the pessimist, nay, even the ambitious man, may each be out of harmony with his environment but yet not insane. Of all the symptoms of insanity, possibly the presence of illusions and hallucinations, which delusions corroborate, are the chief indications, because these form the basis of acts and it is *conduct* in the last resort which is the keystone upon which a judgment rests as to what constitutes sanity or insanity. It may be pointed out, however, that there are probably many hundreds of men and women who suffer from no legal disability or social ban because of the presence of illusions, hallucinations, or delusions. They fulfil all their obligations to themselves and to society and their idiosyncracies are tolerated. When, however, abnormal conduct passes a limit fixed for that particular class of society, considerations of expediency decide that the person should be segregated; he is then certified and henceforth becomes an official lunatic and his insanity a recognized aberration. I venture to think that many of these cases in their early stages are functional. It is well known to those with large experience of mental diseases that all the symptoms of insanity may be present in disordered conditions of health, and cases are received into asylums which are not true organic insanity but the delirium of febrile diseases, where illusions, hallucinations and delusions were temporary and due only to disordered nutrition. I have seen cases of scarlet fever, typhoid, and pneumonia in whom the mental symptoms so preponderated that the patients were certified and admitted into an asylum as alleged lunatics in whom the illusions, hallucinations, or delusions were only the temporary delirium or febrile states resulting from disordered nutrition. Furthermore, in regard to the question of insanity the symptoms may be repressed at the instance of the individual patient, who is able to inhibit the undue prominence of delusions or of any one striking content of consciousness, which again indicates that there is an absence of structural or organic lesions. It will be seen that we not only deal with legal insanity—which is a formal and artificial aspect—but that the term insanity is to

us more comprehensive and is taken to include all mental conditions which are opposed to sanity. What has the pathologist to say to us about insanity? If we except definite lesions accompanying parietic and other forms of dementia, certain neuronie and other changes in acute delirium, and the deficiency of brain development in idiocy and imbecility, there is no pathology of insanity. There are innumerable mental states for which there are no definitely discovered or ascertained physical conditions, and there are many mental abnormalities in which both microscopical examination and the comparison of appearances observed after death with the symptoms recorded during life, fail to discover any morbid states in the brain underlying the mental derangement. In many cases of insanity the most delicate electrical apparatus, the test tube, the ophthalmoscope, the sphygmometer, and the microscope in the hands of able, earnest, and competent observers and investigators have all failed to recognize any disease in the physical substratum of mind, and observers have been content, in the absence of definite lesions, to describe mental abnormalities as "disease manifestations"—but not disease, *i. e.*, the mental states or conditions are functional and not due to structural or organic changes. It is open to objection that the absence of observable lesions is not definitive, that failure to observe them is due to insufficiency of the means of investigation at our command and that the further investigations are directed the fewer become the the number of functional diseases. It is accepted, however, that up to the present many nervous disorders have attributed to them as facts of causation conditions such as are implied in the terms "defective or disordered cerebral innervation," phrases which although somewhat vague may yet probably harmonize with the facts better than any others hitherto advanced. Ferrier, Horsley, Waller, Sherrington, and other great physiological workers have thrown much light upon the energy set free in nervous centers. Horsley has detailed methods of estimating the amount of energy developed in the nervous centers themselves by quantitative measurements of phenomena correlative to nerve energy, and Mosso has endeavored to draw conclusions in regard to nerve energy by measuring the physical effects directly produced by its activity. In spite of these researches, however, we know little more than the rate of transmis-

sion or the rate of progress of nervous energy along a nerve. What the actual energy may be is still vaguely described as "motion liberated by molecular change," *i. e.*, by chemical or electrical changes in the highly specialized nervous structures, a position scarcely advanced beyond the description of Newton, that nervous energy was "a vibratory disturbance of the particles of the nervous system." Possibly all actions of nerve elements in the brain are a chemical change, the molecules breaking up into lower compounds. We know little about nerve force, but we do know, by their sensitive reaction to toxic agents, that the higher nerve structures are exceedingly delicate, that they are readily excited and readily inhibited showing a condition of sensitive equilibrium, which is demonstrated by the disturbances of muscular action so characteristically associated with the mental erethism of acute insanity. Let us briefly consider the physiology of these nerve structures. When that part of the cortex anterior to the fissure of Rolando is electrically stimulated, co-ordinated and not individual muscular contraction results—the contractions being with the object of accomplishing some definite movement. An irritative cortical lesion here will cause clonic convulsions, and if circumscribed then convulsions occur in definite groups of muscles, as is observed in Jacksonian epilepsy. A destructive lesion in the same area of the brain will cause paralysis of the same group of muscles, but the paralysis is of the spastic type, which shows that the contractility of the muscles maintained by the lower motor neurones in the cord is exalted, either by removing the restraining influence of the cortical set, or by irritating the lower through the degeneration of this higher group. With regard to tactile sensation, the researches of Sherrington, Campbell, Bolton, and others show that these afferent sensations arrive in the cortex of the parietal lobe by way of the optic thalamus—which probably modifies impulses from the periphery—and are closely related to the efferent motor discharges. Tactile sensation is the most general and universal source of knowledge of the environment in the vertebrata, and it is this region, possibly the "kinæsthetic area," which is affected in sensori-motor disturbances and gives the individual his personality. As to the neurone, its body not improbably exercises a trophic influence over the neuraxon, which also in turn exercises some temporary influence

upon the cell body, whereas the protoplasmic dendrites by their arborizations with axis cylinder collaterals and by their extensive branchings over minute blood-vessels are both centripetal organs for collecting nervous impulses, and nutritive channels for the supply of food material. We know the effect of most poisons to be upon the nutritive substance of these neurones, and, with the possible exception of the tetanus toxin, not to be upon the nerve fibres or stereoplasm of these cells. We know little of the cortical areas other than those which are sensory and motor or both and which are described as "kinæsthetic," and possibly two-thirds of the human cortex is concerned neither with motion nor sensation, and it is this portion of it which differentiates man from other vertebrates. This remaining portion has been described by Flechsig as the great association area. It is said to be concerned with judgment, comparison, believing, and originating actions, and to be functionally the highest area, involving the most complex intellectual processes. This region, physiologically, is therefore the most highly developed, the least organized, and the most complex of all the cortical areas and in consequence the most likely to be disturbed by adverse stress. In considering functional mental diseases one cannot but be struck with the different reaction to stress of individuals in different families. We know of some families with suicidal impulses, in which mental depression caused the suicide of grandfather, father, and son, each in his turn at corresponding ages. Of all forms of mental affection, that associated with suicide is the most often inherited, and of 1708 males under my care, suicidal tendencies occurred in 27 per cent. In 200 of these latter, a direct history of ancestral insanity was noted in 43 per cent, and a collateral one in 27 per cent. We meet with an epileptic parent with more than one insane child. I have had under my care in an asylum, a father and at different times five of his children and it is quite common to meet with father and son or sons suffering from insanity and frequently in the same asylum. Also, insanity appears to have hereditary equivalents; for epilepsy, hysteria, hypochondriasis, chorea, alcoholism, and crime, may appear interchangeably in the descendants of insane parents. Even genius, which is a departure from the normal type, is not infrequently met with among relations from an insane stock. Not a few among the patients in city asylums,

or among their relatives, are inventors and patentees. In no department of medicine is the question of family inheritance more marked than in the practice of nervous diseases, and it is not ideas or diseases themselves that are transmitted as we see by the interchangeable equivalents already referred to, but a "tendency" or a natural proclivity to nutritional disturbances and manifested mainly at one or other of the important and critical periods of life when a strain or a stress ordinary and habitual to the stable person and easily borne by him, may in those with family history of insanity cause a mental breakdown. Man is an agglomeration of organs, and the healthy life of man is the harmonious co-operation of all these dissected elements, each of which in health contributes to the total well-being, each also being capable of resisting disintegration through adverse circumstances, according to its own special stability. This tendency is familiar in the practice of all hospital physicians who observe the liability to nutritional disturbances in other organs, such as the liver or kidney, or in groups of organs such as these with cardiovascular affections, and also by the appearance of malignant disease passed on, so to speak, from parent to offspring.

Now mental reaction greatly depends upon the character of the afferent stimuli brought to the cortex from the various sense organs, and it is interesting to note that the sense of smell (the least informing to man in regard to the external world) is phylogenetically the oldest, being most highly developed in the lower vertebrata; some fishes, for instance, having as Dr. G. F. Watson has shown, relatively the greatest central representation for it. This sense is therefore the most organized and it is rare for the sense of smell, or even taste, which also gives little knowledge of the external world, to be affected in insanity. The two senses which supply man with means of communication by speech, writing, and reading are sight and hearing; together they are pre-eminently intellectual, they are exact and analytic and are on a higher plane in man than are any of his other senses, but they are the most frequent to be disturbed in cases of highly evolved insanity. Touch, the most general of the senses is less intellectual than either sight or hearing, but is the one most commonly disturbed in that "lower level" form of insanity associated with hysteria, and to which we shall again refer. As to the senses, illu-

sions form a common psychic phenomenon in insanity and it is doubtful—unless they are unilateral—if mental illusions are ever peripheral. Both illusions and hallucinations may be physiological, that is, they may be temporary in their duration or they may come and go. We meet with cases of insanity in whom these perversions are not constant; there are periods during which those who suffer from them are suddenly quite free and remain so for indefinite intervals, a condition which suggests that the fundamental process is nutritional and functional; possibly the fine dendritic processes of the neurones are temporarily disturbed, as they are known to be in cases of injury, when mental unsoundness is characterized by loss of memory of the accident, but which ends in complete recovery. It is a short step from illusions and hallucinations to delusions, which are ideas conceived upon false sensory impressions or perceptions. We are familiar with deceptive impressions produced by diplopia, scotomata, photopsia, disease of the peripheral nerves, and enotic sounds of various character, all of which may be due to nutritional disturbances and none of which can be considered to be insanity. Delusive ideas, like hysteria with contractures, may in time be accompanied by organic changes, but in their early stages they are more often functional, for other associations may grow and eject them. It is the consequence of delusions rather than their cause which makes them pathological and it is their projection outwards which eventually causes them to be regarded as insane delusions. So long as we are dealing with the external world, our facts of causation are simple and apparent, but when we pass to ideas—questions relating to “self”—we are face to face with “consciousness” and we are unable to analyze either the consciousness of others or what have been described as our own “unconscious physiological processes” conditions often referred to in hysteria. We can only state that the cause thereof appears to be psychical phenomena. We do not know even what the various elements of mind may be, but we can relate the different ways in which consciousness may refer to an object, viz., as being pleased with it, desiring it, and remembering it. We do know, however, that the various elements implied in cognition and feeling, when displayed in correct association and under proper control do give us healthy mental reaction; when these are impaired or their combination

is affected, then the prominence given to any one factor possibly implicates all the others, and illusions, hallucinations, or delusions result. The delusions met with in insanity—whether functional or organic—are as various as the manifestations of human thought and we can only say in regard to them that some stimulus probably excites a group of cortical neurones, and a kind of “intercellular tetanus” gives rise to a play of ideas, which, when the excitations are transferred to motor fibers, are associated with action. In health the steady current of nerve force flows evenly from center to center and there is equilibrium between the various groups of cortical neurones, the stream of nerve force also flows down the pyramidal tracts and controls the spinal centers, keeping the muscles in a state of healthy tone. All the neurones are probably in a high state of chemical tension and any nutritional disturbance means explosion followed by exhaustion, a condition which we possibly find in all functional diseases.

What is the characteristic feature of functional diseases and what are the forms of mental abnormalities which come under this description? Speaking generally, we are correct in stating that functional diseases are characterized by their lesser duration, their slight and transitory character and their recovery, and this is the standpoint from which we urge the consideration of the subject under discussion.

It is not improbable that hysteria is at the root of most of the mental conditions in women that came under the observation of the asylum physician. It is as definitely related to mania in women as hypochondriasis is to melancholia in men, and both are conditions pre-eminently functional in their pathology. Hysteria may be looked upon as a temporary sensori-motor disturbance with a psychosis, and the sensory disturbances of hysteria indicate that there is a participation of centers lower than those connected with mental symptoms. Hysteria is a “lower level” form of insanity, which to some extent is under the control of the higher centers; whereas insanity is an affection of the highest levels and therefore a disturbance of the highest intellectual processes themselves. In hysteria the tendency was for action to follow upon afferent or sensory impressions, whereas in case of insanity, action followed delusions. Sensory disturbances effected results in hysteria similar to “fixed ideas” in variety and as in

hysteria one cause or a summation of causes may bring on various effects, so in insanity one overwhelming psychosis or a series of small worries and anxieties may cause the mental symptoms.

The greater number of women admitted into asylums during the adolescent period of life suffer from insanity of a transitory type as is evidenced by the fact that of the women admitted under the age of 25 years into the London asylums during 1903, 53 per cent were discharged recovered, whereas the recovery rate based upon all ages was only 34 per cent. This type of insanity is often dependent upon anomalies of health, such as anæmia, amenorrhœa, simple exhaustion, the strain of modern life, and disturbances of the emotions, and it passes off with improvement in the general health, and nearly 50 per cent of all the women who were discharged recovered left the asylums of London under six months residence. There is no definite hysterical psychosis, although most of these cases are exceedingly unstable and sudden in their mental reactions, which is shown by their capriciousness, irritability, and sentimentality; being at one moment joyous, at another sad and tearful, but without obvious reasons for the change. In the intervals between hysterical attacks they are bright, intelligent, and cheerful. These cases are always exceedingly responsive to suggestion, and the various forms of paralysis they suffer from are either assumed by suggestibility, or they recover by suggesting or diversion, the moral treatment frequently referred to as asylum treatment and implying a change of function. There is often a loss of memory which renders hysterical patients self-contradictory, but the amnesia is not limited to ideas, there is amnesia of the "kinæsthetic" elements as well. There is no recollection of the movements of a limb, showing that the sense of muscular impressions—probably registered in the Rolandic area—is functionally in abeyance, the various movements with their images fail to be preserved and reproduced owing to the functional disturbances giving rise to a condition called "kinæsthetic anæsthesia." Amnesia in these cases may be so marked that all past events in their life may be completely deleted, their memory only returning with or after another paroxysm. Such cases are rare, but a classical description is given of sudden transformations by Dr. Albert Wilson in his record of a case of "double consciousness" or dual per-

sonality. These occurrences quite justify the definition of hysteria as a "disintegration" of the personality. The weakening of will power is a distinct feature in these cases, many women being quite unable to carry on their ordinary avocations and having no power even to answer questions. The prominence of the sensori-motor disturbances gives rise to vociferous singing, laughing, and dancing, or the patients in their excitement break windows, tear clothing, shout, scream, and behave extravagantly, which indeed most frequently results in their being brought under treatment. These seizures, followed by lethargy together with the mental state have caused such cases to be mistaken for epilepsy, and I have received cases in which the seizures and symptoms were described as due to this cause, but which were really cases of hysteria. I have also received cases in which these statements were made in the medical certificate, but the fact of coming under treatment and being brought to the asylums has acted as a shock of surprise and no further demonstration of excitement have taken place. The suddenness of these states and their variability harmonize with the suggestion that these are nutritional disorders and not organic lesions. Of all the physical symptoms of hysteria, anæsthesia or disturbances of sensation are the most constant, and cases are familiar to most hospital physicians of patients who were completely helpless upon admission, yet who could move their legs in bed or push their feet against an object but could not stand or walk, yet with the stimulus of a strong emotion or a new suggestion they have walked easily, possibly after weeks or months of bedridden helplessness. The anæsthesia in hysterical cases is somewhat pathognomonic. It may be in islets of skin not corresponding to any peripheral nerve distribution or that of blood-vessels, neither does it conform to any spinal distribution and it is not segmental or embryonic in character. It is total and complete, and corresponds with a cortical area having associated or systematized functions. Hysterical patients are not conscious of their loss of sensation, the loss does not come into their personality and there is in consequence a "shrinkage" of consciousness. Such is not the case in the anæsthesia of gross lesions, which further suggests cortical affections. The cortex, moreover, besides sensation, controls the emotions, the heart's action, respiration, speech, and voluntary movement. All these may be, and often are, affected in hysteria.

In the condition described as *astasia* there is no definite paralysis, but the patient is unable to stand, and in *abasia* he falls when attempting to walk, although he can skip over a rope or walk on tip-toe. Moreover, in conditions such as "writer's cramp" and in the various and numerous other occupation neuroses, there is paralysis of different forms, but at the same time there is complete control over the hand, which can accomplish any movement other than that which caused the paralysis. Such clinical facts as these distinguish between disturbances of function and disease of the organ—a theory which is thus capable of explaining the phenomena. The mental symptoms of hysteria are vividly portrayed in mental epidemics, such as are initiated by the so-called "Revivalism," as also in cases of "possession" or "demonomania," cases of witchcraft and "cures" at holy shrines.

Another functional condition which merges into insanity is hypochondriasis. It is as closely related to sensation as hysteria is to the emotions. There is a feeling of profound illness and a tendency to exaggerate and brood over the feelings, which give rise to morbidly conscious states. The whole of the person's attention is concentrated upon his sensations, but there is nothing abnormal to be discovered at the periphery, and the functions complained of appear to be physiologically healthy. If in hysteria there is a cortical absence of certain sensations—which may determine anæsthesia and paralysis, in hypochondriasis there may be cortical hyperæsthesia of sensory areas. Whether these conditions are due to exhaustion, or to some influence which modifies exhaustion, and which brings these sensations into undue prominence is not easy to ascertain. If, however, hypochondriasis be of long duration, the mental state associated with it tends to become fixed, which supports the view that long continued functional disorder tends to become organic, as we see when hysterical contractures are accompanied with sclerosis of the corresponding pyramidal tract. It has been experimentally proved that peripheral electrical stimulation continued for long periods may give rise to structural changes in the brain. There are many borderland cases whose depression may be diverted by functional treatment; cases which a change of occupation relieves and which thus recover.

A condition often met with in highly wrought, able, and over-

worked men and women and now described by the term neurasthenia is somewhat allied to hysteria. There is hyper-sensitiveness in both, but there are no sensory disturbances in neurasthenia, no motor paralysis, no fits and no contractures, although neurasthenia may occur in hysterical subjects. There is simply fatigue and increased excitability with muscular weakness, and it is a symptom-complex rather than an entity. There is the same difficulty in fixing the attention and the same deficiencies of memory as in hysteria. The condition is probably the result of long continued mal-nutrition and ill-health, and is favored by civilization and city life, by heredity and by various excesses. Of the exciting causes, possibly, influenza, is as potent a factor as any, especially when acting upon an already exhausted constitution. I have seen many such cases outside the asylum, not seldom among the "prize winners" in life; and although nature is generally uniform in her lesions, this functional state being of long duration is known to end in confirmed organic brain changes and chronic insanity, demonstrating its analogy to the contractures accompanied by organic lesions in cases of protracted functional hysteria. A state of mind bordering upon insanity is that of mental depression without delusions, the condition described as "*folie raisonnée délirante*." There is no other functional disturbance and the sufferer is for a varying period in this state of unrest when suddenly equilibrium is established and the phase passes off.

Another functional condition which is responsible for at least 8 per cent of all cases of certified insanity is epilepsy. The abnormal mental states associated with epilepsy are unlike ordinary insanity for those who suffer from it are more altruistic and they are less under the sway of delusions, but suffer more frequently from sensory disturbances. The mental states of epilepsy seem to be halfway between these of hysteria and true insanity, the sensori-motor disturbances are present and so also are those of consciousness, which latter during the fit is completely in abeyance, yet it must be owned that there are no definite lesions in cases of idiopathic epilepsy. Of all mental states in relation to the fit that of post-epileptic automatism is the most inexplicable. After an epileptic fit a person will occasionally lose all memory of past ideas, he will wander about, take a new name, forget wife, family,

and domestic attachments, assume a fresh occupation and oblivious of the past start upon a new life and remain in this fresh environment for an indefinite period, or until another fit brings back his recollection and he returns home after a complete functional "topsy-turveydom." Some such occurrences in less striking forms are frequent, and are closely related to hysteria, but as they suddenly change, they remain unexplained by any organic or structural theory. I have recently had under my care three men certified as insane after a "fit" of some kind which completely erased from their memory events in their previous life and leaving them with a new personality.

In ordinary daily life we often find after fatigue that there is considerable difficulty in fixing the attention, we have a weakened grasp of our subject and cannot recollect a lost word—there is difficulty in expressing our ideas in words. Long after we need it, the missing word appears—possibly in association with some remote expression, and we are unable to explain the phenomenon except upon the theory of disordered neuron function. It has been pointed out by Gowers that the most common effects of over-use of the brain are sensory, and evidenced by some disturbances in the feelings which, as he states, are appalling in their variety and degree. This view, in my opinion, coincides with the evolution of insane ideas which are based upon sensory anomalies; but what it is that causes these functional disturbances is not so clear. Hodge describes a swelling but not a destruction of the cellular protoplasm in conditions of fatigue. Possibly some products of nervous overaction fail to be eliminated, and either poison the store material of the nerve cell or interfere with some obscure electrical or radio-active action at the synapses. As Gowers further states, we cannot estimate the cumulative effect to which a minute original variation in the nutritive material of a nerve cell may give rise, but we have experience, and are aware, that function can alter structure. In regard to some of the allied neuroses, cases of "convulsive tic" seem to me closely related to cases of delusional insanity and impulsive obsessions, those of neuralgia and megrim, of tetany and cramp also closely resemble in their suddenness and intensity those of various forms of epilepsy. I have seen tetany associated with mental depression, following exhaustive diarrhoea, and both have cleared

up with improvement in the general health. These neuroses with chorea, and para-myo-clonus multiplex seem to me to be heirlooms of psychopathic and neuropathic families, and so far as it is at present known are without definite structural pathology. I have at present under my care a case of para-myo-clonus with mental symptoms, who is one of three members of the same family similarly affected. The mental state of patients suffering from what is styled "dementia precox," in my opinion seems to be closely allied to functional states, some of which appear to be physiological. The mental pre-occupation of ordinary normal health for instance bears much resemblance to the abstraction of these demented youths, and it may not be unreasonable to look upon the later as functional states, for a few of these persons recover quickly, the symptoms are of short duration and vary from slight moody self-absorption to complete lethargy and stupor. Moreover, the mental symptoms probably occupy the same nervous regions, they are provoked by the same causes and are executed by the same mechanism, whether the condition be functional or organic. It is unlikely, however, that long continued stupor can exist without organic change in the pyramidal cells of the cortical area, as functional activity stimulates nutrition and is beneficial; whereas, its suspended activity means a decreased blood supply and therefore a slower removal of used-up products and less nutritive plasma.

The normal physiological condition of pregnancy is another process with mental symptoms. It is a function which involves the reproductive organs and affects the whole organism. The function of reproduction covers most of the elementary excitations of which man is capable, and is one of the most imperative and fundamental of the activities in nature. It is accepted that gestation is attended with a great deal of nervous disturbance in all women, the intimate sympathetic connection of the mammæ with the gravid uterus giving rise, even in normal persons, to various forms of neuralgia, headaches, dizziness, and insomnia, which may be so extreme that irritability, fractiousness and despondency of a serious character ensue, yet these conditions completely pass off in the majority of cases when the fulfilment of this process is complete.

I purposely avoid any reference to the many toxic insanities,

although the confusional delirium and the acute hallucinatory states accompanying alcoholic intoxication, pernicious anæmia, puerperal toxæmia, cocaine, morphine, pellagra, and other poisons closely simulate those of febrile diseases and coma. Possibly that condition described as dipsomania, the longing or craving for stimulant is a functional state. It is like other similar states without any organic pathology and like them also one that occurs in persons with a tainted family history—psychopathic or neuro-pathic.

I do not think I need go further than to draw two conclusions from the imperfect consideration of this long list of functional mental and nervous diseases. Firstly, the necessity for maintaining a sound heredity. Secondly, to urge that all cases presenting mental symptoms should be brought under treatment as soon as possible, for minute variations in the nutritive plasma may effect serious results upon and cause distressing disturbance in the essential element of nervous tissue, as functional mental diseases of long standing in an organ such as the brain—which is the slowest to reach maturity—may cause organic and incurable insanity.

COMPARATIVE MEASUREMENTS OF THE HARD PALATE IN NORMAL AND FEEBLE-MINDED INDIVIDUALS. A PRELIMINARY REPORT.

By WALTER CHANNING, M. D., AND CLARK WISSLER, Ph. D.

The writers have taken up the question of the variability of the contour of the hard palate or what is popularly known as the roof of the mouth, because the assumption has been made that certain types of deformity are the correlates of feeble-mindedness. This assumption is so generally current that it is made a principle of diagnosis; and if it is valid, the form and size of the bones of the palate must be regarded as an important morphological determination. The ideal way of approaching the problem would be through the comparative measurements of the skulls of feeble-minded and normal individuals; but material of this kind is not available. Thus it becomes necessary to make observations upon the palates of living subjects. To this end Dr. Channing spent several years collecting casts of the hard palate. We shall not discuss here the advantages and disadvantages of this method, except to state that practical diagnosis is made upon the living and concerns itself with the same external aspect of the palate tissue as is revealed in the casts. The technique of the casting process has been developed in dentistry.

We present at this time a brief preliminary report upon the measurements of casts obtained from public school children and adults, selected at random, and from inmates of schools for the feeble-minded. The relative number of available casts is as follows:

	Male.	Female.	Total.
Normal	314	300	614
Abnormal	558	452	1010
Totals	872	752	1624

The measurements to be reported upon at this time are:

A. The minimum distance between the first molars, measured horizontally from the bases of the molars.

B. The maximum height of the palate, measured from the approximate plane of the gum line.

C. The distance from the line connecting the two first molars to the alveolar point.

D. The distance between the canines, measured horizontally from their bases.

Other measurements were made, but a discussion of them is not necessary for the present purpose. The determination as to what measurements were significant was made the preliminary problem of the research. With this point in view about 150 casts of normal adult males were measured in a great many ways and the results treated by the method of correlation until the most definitive measurements were discovered. From the standpoint of the ultimate problem—the variations in the form of the hard palate as correlated with mental abnormalities—it was desirable to discover the definitive measurements least affected by growth and accidental variation. The net result of this preliminary study, the details of which will be given at another time, was that the four measurements enumerated above best fulfilled the requirements.

The measurements were made with a machine constructed in such a way as to measure accurately in three planes from any given point. The cast to be measured was placed upon the table of the machine and supported by a ball of modeling clay, which permitted the adjustment of the plane of the palate to the horizontal plane of the machine; the indicators were then adjusted to the points to be measured and the readings recorded. Repeated measurements of the same casts made it evident that accuracy for distances less than one millimeter was not practicable, and in consequence the recording was always to the nearest millimeter.

In such a procedure the errors of measurement include those of reading and adjustment. It is necessary to know not only that all these measurements are considered accurate, but also the approximation of this accuracy. To this end the measurements from a series of 105 casts of normal adult males were repeated as nearly as possible under the same conditions. The values for the two measurements were:

$$\begin{array}{l} \Delta v. \quad \bullet \\ A_1 = 35.07 \text{ mm. } \pm 3.32 \text{ mm.} \\ A_2 = 35.27 \text{ mm. } \pm 3.19 \text{ mm.} \end{array}$$

But in the nature of the case errors in measurement should not affect the average so long as they are accidental, because there should be as many negative deviations as positive, and if the conditions are constant the value of the standard deviation, or σ , should be approximately the same for each trial. Yet while the average is little affected by accidental errors, it is otherwise with the true value of σ , the standard deviation. Such errors always increase its magnitude because the possible limits of the variabilities in the series are extended by an amount equal to the error in measurement. When the differences between the two measurements of the different casts are tabulated, it appears that a little more than fifty per cent of the differences are zero and that the positive and negative differences are so distributed as to make the average — 0.26 mm. with a standard deviation, or σ , of ± 0.96 . From this it appears that the most probable difference between the measurements of any given cast is less than one millimeter and an inspection of the series shows ninety per cent of these differences to be within the range of one millimeter. This is quite satisfactory as to accuracy, for no measurement can be more refined than the unit employed. The significance of the above is that in 90 cases out of 100 the error is less than one millimeter.

The general tables give the number of cases (n), the average measurement, and the standard deviation (σ) for each age until maturity.

In the first place it seems reasonable to assume that the values for the children of different ages will give a curve of growth. A hasty glance at the numerical averages in the table gives the impression of little or no growth from six years to the age of maturity. But while the amount of annual increment for this period of life is small and of little significance, certain interesting differences appear when the averages for the respective ages are plotted. The width of the palates of normal children as measured at the first molars shows a general tendency to increase for the successive ages from six to fourteen years, the curves for males and females having the same general direction. For males the maximum difference in average width occurs between the sixth and eleventh year—a difference of 1.69 mm. The probability of this difference is expressed by $1.69 \pm .72$, or about 0.965. Yet this is the extreme difference for the successive ages from six

to fourteen years, and some reduction must be made for accidental variation in the series measured. Moreover, the general trend of the curve indicates that the increment of growth for the whole seven years is not more than one millimeter. The average for the total of normal male children ($n = 192$) is 32.92 ± 2.28 mm. This average of approximately 33 mm. does not vary more than one millimeter from the value of any one year throughout the period. Unfortunately the series of normal palate measurements is not complete and it is necessary to compare this value directly with the average for normal adult males: $n = 126$. $A = 34.75 \pm 3.35$. The difference between these averages is 1.83 mm. At this point the importance of a precise method for estimating the magnitude of the allowance for accidental differences between the averages is apparent. This may be done by statistical methods, of which the following is a mere categorical statement.

The accidental range of averages can be estimated from the value of A and σ . A is the approximate average of the type, an unknown value, or the true average. If the first group of measurements gives an average of A_1 , another group of measurements upon individuals of the same type, will give a value A_2 , etc. These values for A will cluster around the true average, or type, in a symmetrical manner. The probable error (ϵ) of any average (A) is expressed by $\epsilon = \frac{\sigma}{\sqrt{n}}$. Now the width of the palate for normal male children is 32.92 ± 2.28 mm. Then for A_1

$$\epsilon = \pm \frac{2.28}{\sqrt{192}} = \pm 0.16.$$

$$\therefore A_1 \pm \epsilon = 32.92 \pm 0.16.$$

The extent or range of a series is found to be about 4.5 times the value of σ ; for convenience we will take it at 5 times. Applying this to the above, we find the entire probable range of A to be ± 0.80 , or a total of 1.60; however, 68% of the values for A should range within 0.16 (ϵ) above and 0.16 below the true average, a total range of 0.32 mm. Now for adult normal males the values are:

$$A_2 \pm \epsilon_2 = 34.75 \pm 0.30.$$

$$\text{The extreme range} = \pm 1.50.$$

Hence, we should expect the averages for other similar groups of the same number of normal males to fall between 33.25 mm. and 36.25 mm. So much must be allowed for accidental differences.

Obviously, so long as A_1 and A_2 do not differ from each other more than their combined accidental ranges of error, they belong to the same type. If they do belong to the same type they should not differ more than their combined error. The combined error of A_1 and $A_2 = \pm \sqrt{(\epsilon_1)^2 + (\epsilon_2)^2} = \pm \sqrt{(0.16)^2 + (0.30)^2} = \pm 0.33$. $(A_1 - A_2) = 1.83$, which is a little more than five times the extreme range ($0.33 \times 5 = 1.65$). Hence, the difference is of such a magnitude that A_1 and A_2 may or may not belong to the same type, the chances favoring the latter possibility. Yet the difference for the averages in width for the ages from eleven to thirteen years falls within the limits of accidental error. Consequently, for male children over eleven years of age and adult males no certain difference in width at the first molar appears, and normal female children give the same result. Thus the absolute amount of growth in this dimension is negligible after the twelfth year.

In the series for abnormal individuals all ages from six to maturity are represented, but the result is the same as for normal children.

The width at the canines shows a more decisive increase among normal children until the eleventh or twelfth year, while the averages for adults show a decrease in the width. The averages for abnormal individuals show a general tendency to fall with increasing age. From the group averages in Table II and III it is apparent that this peculiarity is common to all classes. The difference is doubtless due to the development of the canine teeth. The permanent canines, as shown by the material, begin to show themselves in the tenth year and have appeared in most children by the thirteenth year. This corresponds to the period of maximum width at the canines as found in the measurements. We have, then, a small difference due to the growth of the teeth from which we may infer that there is no growth of the maxillary processes in front of the seat of the canine teeth after six years of age. The averages show that the measurements for the age of

six, seven, and eight are about on the same level as those over twenty-one, which is consistent with the above.

The averages for the length of the palate follow the same general direction as the above, but with greater variation. Those for normal children reach their maxima about the ninth year, and an examination of the casts shows that this is the average age for the eruption of the upper median incisors; consequently their growth would affect the measurements in a similar manner, causing an abrupt apparent increase in the length, followed by a subsequent gradual decrease. Also, the slight increase in the molar width may tend to shorten the length as measured.

This brings us to the height of the palate. With normal children there is no certain increase with age, but the averages for normal adults show a decided growth. Also the averages for the abnormal show a general tendency to increase between the age of twelve and twenty. The corresponding ages for the girls are slightly less, ranging from eleven to seventeen, which is consistent with the general growth differences between the sexes. From all this it appears certain that some increase in the height of the palate takes place during the period of puberty. The difference between heights for normal male children and adults is expressed by 3.86 ± 4.27 mm.—a positive difference.

Incidentally, the differences between girls and boys have been noted, but we may add that the averages for normal children follow the same directions of change with such small degrees of difference that it would be possible to treat them as one series. However, it is apparent that, even with such minute differences as do exist, the boys tend toward higher averages. Both with the abnormal and the normal, with children and with adults, the male palate is slightly larger than that of the female, there being no other apparent characteristic difference. During the growing periods there are suggestions of differences in relative maturity, but these are so uncertain that nothing can be concluded and, in any event, they are probably parallel to the general differences in the rates of growth for the sexes.

As to the absolute size of the palate of the normal and the feeble-minded the tables should give positive information. Since the plotting of the curves for the averages of the normal and abnormal children shows them to have the same general direc-

tions, throughout, we may disregard age and treat the children as a group in opposition to corresponding groups of adults. The averages for children between the ages of six and fourteen and for adults are given in the general tables from which the following table of differences can be calculated:

	Ages.	Male Difference.	Female Difference.
<i>A</i>	6-13	+ 0.94	- 0.56
	21 +	- 0.98	- 0.72
<i>D</i>	6-13	- 0.04	- 0.30
	21 +	- 0.63	- 0.47
<i>C</i>	6-13	+ 0.68	- 0.11
	21 +	+ 1.13	- 0.32
<i>B</i>	6-13	+ 1.25	+ 0.65
	21 +	+ 0.09	.....

With reference to *A*, *C*, *D*, the differences between the normal and the abnormal are seen to range from zero to one millimeter. The differences for the females are in the negative direction, while those for the males are both positive and negative. For both sexes the differences are the least for *D*, the certainty of which for males is:

Normal and abnormal children..... 0.04 ± 0.31

Normal and abnormal adults..... 0.63 ± 0.31

From these figures it is seen that the probability of finding a difference greater than one millimeter is exceedingly small. Consequently we must conclude that there is no significant difference between normal and abnormal individuals as respects the average width of the palate at the canines. For the measurement *A* the differences for males are:

Normal and abnormal children..... 0.94 ± 0.28

Normal and abnormal adults..... 0.98 ± 0.43

The probability that these differences will ever reach a magnitude of $1\frac{1}{2}$ millimeters or more is very small. For the females the probability is still less. Here again, while there is not such a certain correspondence between the averages as in the case of the width at the canine, it is extremely probable that the normal and

the abnormal palates do not differ in width at the molars by an average amount greater than one millimeter.

For the length of the palate the differences for males are:

Normal and abnormal children..... 0.68 ± 0.31

Normal and abnormal adults..... 1.13 ± 0.46

Here we see that the difference for children is as insignificant as in the case of the width at the canines, and that the larger differences for adults are compensated for by the greater variability of the abnormal males, both cases falling entirely within the limits of the probable variation of the averages. We may summarize them by the statement that the observed differences between the average measurements of the breadths and lengths of the palates of normal individuals as compared with those in abnormal individuals represent the accidental deviations of the averages from the type. In other words there is no certain difference.

The height of the palate increases, apparently, between the ages of fourteen and twenty-one. Thus the measurements of children and adults represent two levels easily compared. For males we have:

Normal and abnormal children..... 1.25 ± 0.21

Normal and abnormal adults..... 0.09 ± 0.33

While we find no real difference for adult males, that for children has the characteristics of a real difference. The female children show no such difference, for while the average height for the abnormal is absolutely greater than for the normal, the difference is within the range of accidental deviation from the type. However, as the difference vanishes at maturity, it seems safe to assume that it is a phenomenon of time variation in growth.

So far we have considered differences in average measurements, ignoring probable differences in the variability of individuals. It is obvious that while the averages for the respective groups of palate casts may approximate one type, they may vary more in one direction than in another or in both. For example, in the width of the palate at the canines we may find more lower and higher values for the abnormal series than for the normal, or a yet greater range of value so balanced as not to change the average. The standard deviation, σ , is the approximate measure of

such differences. A summary of the values of σ for the age groups gives the following:

STANDARD DEVIATIONS.

	6-14				14-20				21+			
	N.		Ab.		N.		Ab.		N.		Ab.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
A	2.28-2.35		3.01-2.63		....		3.55-3.19		3.35-3.36		3.61-3.08	
B	1.75-1.96		2.28-2.05		....		2.76-2.51		2.31- ..		2.63-2.66	
D	2.31-2.22		3.01-2.36		....		2.89-2.52		2.24-1.65		2.61-2.89	
C	3.05-2.34		3.09-2.65		....		2.83-2.68		2.39-2.55		4.27-3.05	

Thus for the abnormal or feeble-minded, we find a general tendency toward increased variability with age. While males and females show the same general tendencies, variability is usually greater with the former. As regards normal and abnormal individuals the variability of the latter is uniformly greater than that of the former. Thus we have a constant difference between the sexes on the one hand and between the normal and the feeble-minded on the other. Nevertheless, these differences are relatively small. For illustration, the difference between the values of σ for normal and abnormal male children in case of the canine width is ± 0.70 ; which means that the probable difference between the two extreme cases for the respective series is about 3.5 millimeters.

We may summarize this paper with the statement that the absolute size of the palate as measured by the three specified dimensions seems to be the same for feeble-minded as for normal individuals: that there is a relatively small difference in the variability of these dimensions, feeble-minded showing greater variations; that the width of the palate from the first permanent molar forward remains approximately unchanged from the ninth or tenth year of life; and that it is probable that there is no appreciable growth after the sixth year.

TABLE I.—ABNORMAL INDIVIDUALS.

Age	WIDTH OF PALATE AT 1ST MOLAR.						HEIGHT OF PALATE.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	2	.....	.....	4	.....	.....	2	.....	.....	6	.....	.....
7	5	.....	.....	4	.....	.....	5	.....	.....	4	.....	.....
8	17	33.94	2.43	14	30.42	3.10	17	12.61	2.16	13	13.23	2.61
9	16	34.68	2.01	11	32.36	2.65	16	12.19	2.34	11	13.00	1.12
10	31	33.77	2.86	14	32.85	2.35	33	14.43	1.93	14	12.00	1.96
11	40	34.00	3.43	20	32.15	2.77	39	13.69	2.01	18	12.50	1.66
12	44	33.66	3.71	24	32.54	3.33	43	13.90	2.31	25	12.85	2.41
13	20	33.06	3.72	32	32.81	2.16	21	13.00	2.37	32	12.53	2.26
6-13	175	33.86	3.01	133	32.35	2.63	174	13.39	2.28	123	12.96	2.05
14	53	33.28	3.56	38	33.71	3.32	51	13.13	2.68	38	13.58	2.30
15	37	34.29	3.48	33	32.78	4.30	37	14.24	2.97	33	14.78	2.36
16	43	34.65	2.41	37	32.59	3.07	42	13.92	2.67	37	14.13	2.40
17	37	33.25	3.31	25	32.80	3.06	36	14.55	2.60	25	15.64	1.92
18	34	34.76	3.31	38	32.18	3.38	34	15.55	2.90	28	15.47	2.71
19	17	35.64	2.86	27	32.11	3.00	17	15.41	2.50	27	15.59	2.65
20	37	35.75	3.92	23	32.86	3.46	36	16.00	2.08	20	14.95	2.56
14-20	258	34.29	3.55	211	32.77	3.19	253	14.35	2.76	208	14.76	2.51
21+	125	33.77	3.61	115	33.28	3.06	112	16.09	2.63	115	14.87	2.66
Total	558	34.04		449	32.80							

TABLE II.—ABNORMAL INDIVIDUALS.

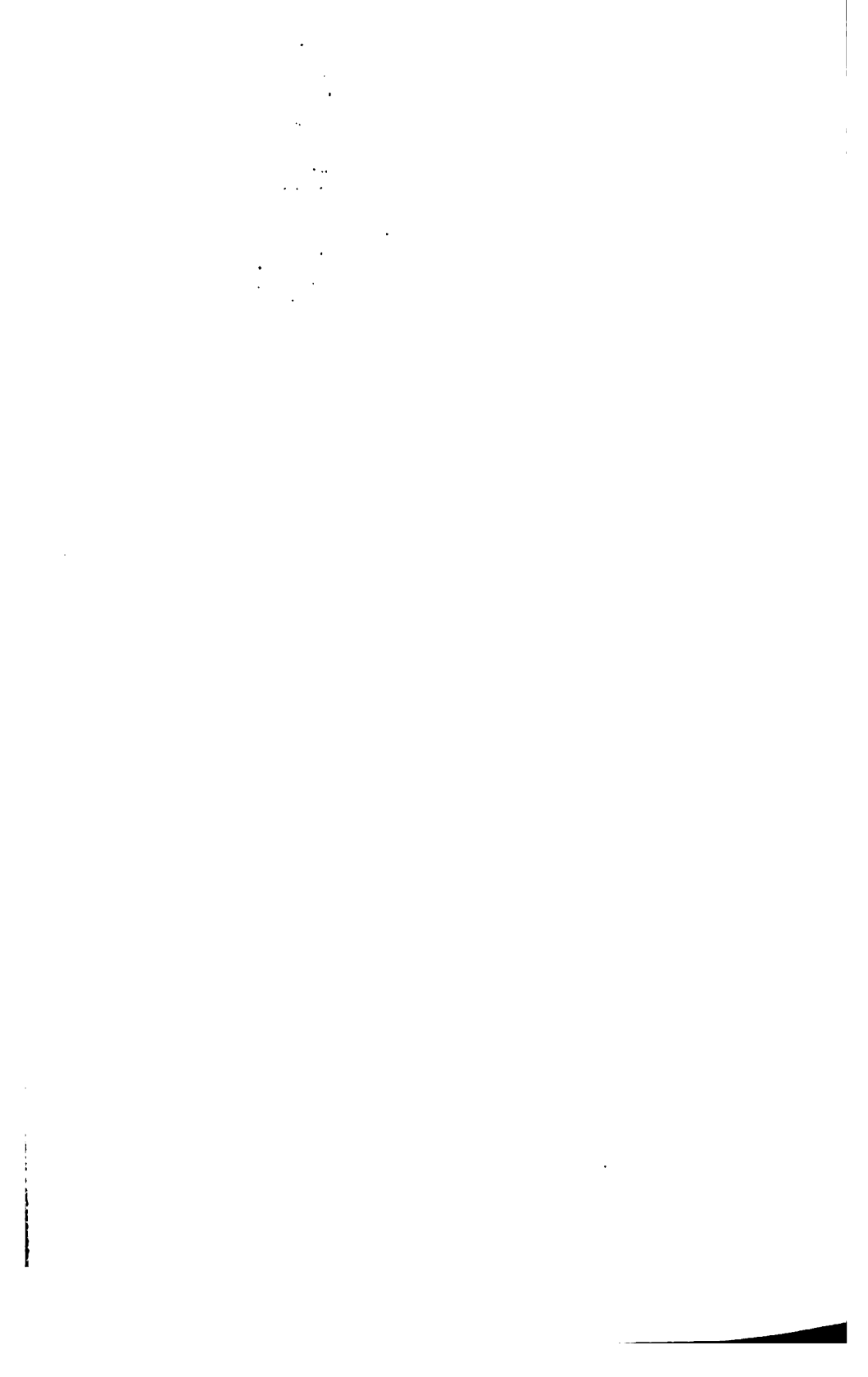
Age	LENGTH OF PALATE.						WIDTH OF PALATE AT CANINES.					
	Males.			Females.			Males.			Females.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	1	.....	.....	4	.....	.....	2	.....	.....	6	.....	.....
7	3	.....	.....	4	.....	.....	5	.....	.....	4	.....	.....
8	14	31.15	2.01	14	29.78	.....	17	22.17	2.31	14	22.64	2.45
9	16	31.00	2.81	11	32.30	.....	16	24.93	3.48	11	23.27	1.90
10	32	31.59	2.61	14	30.00	.....	32	24.84	3.66	14	22.50	2.13
11	39	31.46	3.21	20	30.45	2.23	40	23.32	1.87	20	21.75	2.33
12	43	32.11	3.18	23	30.82	3.30	44	23.25	2.77	25	22.96	2.35
13	21	31.33	3.25	32	30.53	2.87	21	23.66	3.48	33	23.03	2.46
6-13	169	31.36	3.09	122	30.59	2.65	177	23.53	3.01	127	22.63	2.36
14	54	31.27	2.91	38	28.63	2.85	53	23.66	2.65	38	23.10	1.97
15	35	30.00	2.07	32	29.03	2.22	37	23.89	2.15	33	21.60	3.43
16	42	29.47	3.35	36	29.63	2.32	42	23.83	2.28	37	22.00	3.10
17	37	30.16	2.66	24	29.04	2.33	36	22.44	2.53	24	21.75	2.26
18	34	29.44	2.38	28	29.39	2.70	34	22.94	2.68	28	21.57	2.63
19	16	28.81	2.32	27	28.22	3.01	16	23.50	2.50	27	20.88	2.72
20	36	30.83	2.80	21	30.53	3.42	35	23.51	3.20	23	21.95	2.33
14-20	254	30.32	2.83	206	29.01	2.68	253	23.34	2.89	210	21.77	2.52
21+	112	29.50	4.27	102	28.67	3.05	124	23.36	2.61	115	21.67	2.89

TABLE III.—NORMAL INDIVIDUALS.

Age	LENGTH OF PALATE.						WIDTH OF PALATE AT CANINES.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	15	29.73	2.71	38	29.08	1.65	16	23.00	1.87	46	21.80	1.96
7	25	30.86	3.07	36	29.91	1.72	27	22.37	1.86	38	22.50	2.32
8	27	31.15	2.86	29	30.93	2.17	26	23.61	2.15	31	23.00	2.25
9	36	31.16	3.27	43	31.65	2.15	35	23.67	1.96	43	23.60	2.02
10	30	31.33	2.91	34	30.85	2.12	30	24.13	2.28	34	23.70	2.17
11	23	30.77	1.65	31	31.54	2.98	21	24.33	2.17	31	23.48	2.07
12	21	23.98	3.21	23	31.13	2.02	21	23.43	2.80	23	24.17	2.41
13	12	30.75	3.43	16	30.87	3.31	11	23.09	1.48	15	23.20	2.26
6-13	188	30.68	3.05	250	30.70	2.34	187	23.57	2.31	261	22.98	2.22
21+	104	28.37	2.39	48	29.09	2.55	112	23.00	2.24	50	22.14	1.65

TABLE IV.—NORMAL INDIVIDUALS.

Age	WIDTH OF PALATE AT 1ST MOLAR.						HEIGHT OF PALATE.					
	Male.			Female.			Male.			Female.		
	n	Av.	σ	n	Av.	σ	n	Av.	σ	n	Av.	σ
6	16	32.00	2.33	39	32.28	2.13	16	12.50	1.32	39	11.33	1.60
7	25	32.84	1.75	36	32.36	2.65	26	12.80	1.61	35	11.88	1.65
8	29	32.88	2.54	31	32.54	2.43	26	11.88	1.51	29	12.41	1.47
9	37	33.03	2.60	43	33.14	2.28	34	12.35	1.96	43	12.97	1.83
10	31	32.80	2.32	33	32.27	2.48	31	11.48	1.66	34	12.02	1.58
11	26	33.69	2.27	31	33.35	2.13	22	12.04	1.76	31	12.51	2.07
12	16	31.87	2.81	23	33.47	2.28	21	12.42	1.93	23	12.39	2.32
13	12	33.33	3.18	16	33.93	1.87	12	11.50	1.82	16	13.12	2.06
6-13	192	32.92	2.28	252	32.81	2.35	188	12.14	1.75	250	12.31	1.96
21+	126	34.75	3.35	49	34.00	3.36	112	16.00	2.31			



Notes and Comment

CENTENARY OF THE EDINBURGH ROYAL ASYLUM, MORNING-SIDE.—We learn from the article on Insanity in the Centenary issue of the *Edinburgh Medical Journal* to which reference is elsewhere made, that the Edinburgh Royal Asylum was opened for patients on June 8, 1809, and in four years, therefore, it will have completed one hundred years of service to humanity and science. It was at this asylum that Skae did his best work, and his pupil Clouston has made the name of the institution famous wherever the English language is read or spoken.

It is to be hoped that the authorities of the asylum, and the lunacy administration of Scotland will make an effort to fittingly mark the rounding out of the first century of the asylum's career in 1909, and that those who have drawn inspiration and help from the work and example of its medical officers will have an opportunity to join in any celebration which may take place.

HONORS TO DR. W. W. IRELAND.—On March 4, 1905, in the library of the Royal College of Physicians of Edinburgh, Dr. W. W. Ireland was presented with an illuminated address and a purse containing a sum of money subscribed by many of his friends in Scotland. Dr. Playfair, the president of the college, was in the chair, and the presentation was made by Dr. T. S. Clouston, of the Royal Edinburgh Asylum.

The address presented to Dr. Ireland reads as follows:

"On the occasion of the fiftieth anniversary of your medical graduation, and in token of our admiration of your half-century of strenuous work, we desire to offer you our hearty congratulations and to ask you to accept the accompanying gift.

"You entered your profession at an epoch when modern medicine was laying its foundations on a scientific basis. Your teachers in the University of Edinburgh were men of the highest gifts, and, catching their spirit, you have yourself worked hard for the advancement of medicine and the abatement of human suffering in many important ways. Severely wounded at the outset of your

career in gallantly doing your duty during the Indian Mutiny, and suffering from the effects of that wound ever since, you have not taken life easily or spared yourself the fatigue of special brain effort. In literature, in science, and in history you have made your mark on your time. You have opened up a new path in biography by your application of medico-psychology and studies in heredity in the elucidation of the lives of men who have made history. Showing how well you hit the mark, one of those studies of an Emperor of Russia was excluded from circulation in that country. These studies were not only scientific, but were also vivid and interesting to all intelligent readers. 'The Blot upon the Brain' and 'Through the Ivory Gate' will, we feel assured, hand down your name to coming generations.

"In that department of medicine which you have made especially your own you have built up a world-wide reputation. The 'Mental Affections of Children' is our standard work on developmental defects of the mind. Combined with your practical work in this department at Larbert, that book makes the profession of medicine and humanity your debtor. Your original papers on mental and nervous disease and on many other departments of Medicine, scattered in many journals, are all of much interest and value. Your numerous translations and abstracts of important papers in foreign journals have been of great use to your readers, and showed that you were willing to undertake even the drudgery of science on their behalf. Many foreign scientific societies have shown their appreciation of your work by conferring on you their honorary membership.

"Your life has been one of steady effort. Your stores of knowledge, through your extensive reading, have always been willingly placed at the disposal of your professional brethren. To few of their profession could they go with such a certainty of help for valuable references.

"Above all those merits, your personal character combining modesty and genial humor, earnestness and truthfulness, have won our respect and affection. We desire most cordially to express to you our wishes for a long and happy life of still further usefulness. We believe that you will always enjoy the happiness of the man who 'keeps himself simple, good, sincere, grave, unaffected, a friend to justice, considerate and strenuous in duty.'"

Dr. Ireland's many friends on this side of the ocean will rejoice in this well-earned recognition of his work, and join in wishing him many more years of activity and usefulness.

RESIGNATION OF DR. EDWARD B. LANE.—After filling with honor and distinction for nearly twenty years the position of Medical Superintendent of the Boston Insane Hospital, and bringing the institution up to a condition which was alike a credit to his administration, and to the city of Boston, Dr. Edward B. Lane has felt it his duty to resign. The *Boston Medical and Surgical Journal* in commenting editorially upon Dr. Lane's resignation, says:

"It is understood that Dr. Lane felt that his resignation was morally forced upon him by the action of the Board of Trustees. Up to the present time it has been the rule at this hospital, as at similar institutions, that the superintendent, who is held responsible for the proper administration of the institution, should select his assistants subject to the approval of the trustees. The trustees of the Boston Insane Hospital have seen fit to change this rule and no longer require the nomination of the superintendent in making such appointments. Acting under this new rule, they made an appointment which did not meet the approval of Dr. Lane.

"It is unnecessary to speculate upon the motives which may have inspired this action. To the members of the medical profession who know Dr. Lane's ability, and the conscientiousness which he has brought to the performance of his duties, the knowledge that his judgment was at variance with that of the trustees is sufficient ground for deciding that the trustees made a mistake. Nor can we help feeling that a matter which is serious enough to demand a resignation was, in Dr. Lane's judgment, one that vitally concerned the proper administration of the institution and the welfare of the unfortunate patients. Under such circumstances Dr. Lane has taken the only step open to him as an honorable member of the profession with a high ideal of his duty to those intrusted to his care. It is deplorable that such a step should become necessary in an institution which has hitherto been so admirably managed and in which the citizens took a just pride."

Those who hope to see psychiatry assume the position among

the other medical sciences in America which it should hold, and psychiatric clinics established here which shall be on a par both in teaching and in clinical and laboratory research with the best of Europe, can but see in such instances as these, which in one form or another are all too common, a most serious bar to the hoped-for progress.

CENTENARY OF THE EDINBURGH MEDICAL JOURNAL.—The *Edinburgh Medical Journal* celebrates its one hundredth anniversary by the issue of a special centenary number for January, 1905. In this, an introductory note gives a brief history of the journal, and following it are summaries on the progress made during the past century in the various branches of medical science, especial prominence being naturally given to important contributions which have appeared in the *Edinburgh Journal*. There are also thirteen half-tones of the first publisher and the former editors of the journal. The number is a very interesting one. The record of the *Edinburgh Medical Journal* is one of which it has every reason to be proud. We extend our congratulations to the editors upon their publication reaching such a ripe old age and upon the special centenary issue, and we hope that the years to come will continue to find the *Edinburgh Journal* in the front ranks of medical journalism.

DEDICATION OF A NEW CHAPEL AT THE JAMES MURRAY ROYAL ASYLUM.—*Excelsior*, the quarterly magazine of the James Murray's Royal Asylum, Perth, Scotland, discards its usual plain brown dress in its October number and appears in gorgeous purple and silver. This gala dress is assumed to celebrate the opening and dedication of the new chapel at the asylum, which, judging from the illustrations and description, must be a great addition to this old and well-known institution. A full account of the proceedings, with the speeches made, is given in the publication. Dr. Urquhart is to be congratulated on having finally achieved what he has so long desired, and from the pleasant things said in the published addresses it is easy to see that the friends and management of the asylum consider the institution fortunate in having Dr. Urquhart at its head.

Abstracts and Extracts

Two Cases of General Paralysis Successfully Treated by Urotropin. By N. F. HARDY. British Medical Journal, January 28, 1905, p. 185.

The author reports two cases of paresis, one having tabetic symptoms, in which a marked improvement followed the use of urotropin. The histories given are extremely brief and are not at all convincing to the skeptically inclined.

W. R. D.

The Dividing Line between the Neuroses and the Psychoses. By RICHARD DEWEY, M. D. Journal of the American Medical Association, Vol. XLIV, p. 277, January 28, 1905.

This is a very suggestive paper and should be read to be appreciated. Objection is made to the use of the word insanity and psychosis is urged as preferable in every way. The suggestion of Dana that the neurasthenias be classed as psycho-neuroses or "phrenasthenia" is fully discussed.

W. R. D.

Dementia Præcox. By F. X. DERCUM. Journal of the American Medical Association, Vol. XLIV, p. 355, February 4, 1905.

In this paper the author briefly reviews the history of the growth and development of a group of cases which are included under the term dementia præcox, and makes the same objections to the name that have been made by so many other writers on the subject. In conclusion the position of dementia paranoides is fully considered and Kraepelin's position on this point is severely criticised. Dr. Dercum believes that no sharp lines of demarcation can be drawn between the various forms of dementia præcox—hebephrenic, katatonic, and dementia paranoides—and that progress will not be served by attempts to do so. He believes the term phantastic paranoia to be preferable to that of dementia paranoides.

W. R. D.

Some Minor or Borderline Psychoses of Alcoholism. By FRANK PARSONS NORBURY. Journal of the American Medical Association, Vol. XLIV, p. 865, March 18, 1905.

The greater part of this article is occupied by the abstracts of the histories of two very interesting cases, with comments. From the author's experience he believes he is justified in saying "that sexual delusions, especially of infidelity, are almost pathognomonic of alcoholic mental perversion." A statement which, but for the qualifying "almost," would find many opponents. The following conclusions are made regarding these mental disorders:

1. They are rare in acute alcoholism, but may appear in adolescents of neurotic type.

2. They are more frequent after adolescence and up to 40 or 45 years of age.

3. They occur both in continuous drinkers and in periodic delinquents.

4. The prognosis is variable, depending on inherited frailties and moral development.

5. Early treatment is advisable as a prevention of major psychoses.

6. Treatment is successful in the majority of cases, providing we have the earnest co-operation of the patients and can have them under our immediate care for a protracted period.

7. Such cases should be distinguished from ordinary chronic alcoholics and should be treated from the standpoint of mental disease. W. R. D.

Ueber Dauerbadeinrichtungen grösseren Stils. Von K. OSSWALD. Psychiatrisch-Neurologische Wochenschrift, Sechster Jahrgang, S. 165-173, August 6-13, 1904.

Among the modern methods of treating the acute and chronic excitable mental cases, besides the bed treatment, the system of prolonged bathing is growing in favor and is found of much value. The combination of both methods, namely, bed and bath treatment, has produced a very marked change in the restless and violent patients of our institution. The prolonged bath, like the bed treatment, need not cause special expense or rearrangement when it is to be given on a small scale. Experience has shown that the prolonged bath may be given in every well-arranged bath room, especially when the latter immediately adjoins the ward. It is necessary that the water supply used for prolonged bathing should be connected with the central heating plant, so that the hot water supply will always be of sufficient quantity both day and night, and the temperature free from variations by reason of water being drawn for other purposes. It is important to test this in each case, especially as to the capacity for supplying warm water during the night, for if difficulties occur in consequence of a lack of hot water, it is not only very annoying, but places the method itself in jeopardy, and can be rectified only at considerable expense. Prolonged baths without arrangements for a sufficient and regular hot water supply are not advised on account of the difficulty of obtaining hot water at all times.

The purpose of this treatment is the quieting of the acute and chronic insane, also those periodically excited. It naturally follows that the bathing plant be placed as near as possible or connected directly with the wards for restless cases where constant attention is required. Accommodations should be made for about 15 per cent of the restless patients. The place in which the prolonged bath is to be established must in general conform with all the requirements necessary in the wards. It should be large and airy, have high ceilings and preferably be of an oblong form in order to make watching easier. It should be well lighted and comfortably heated; thoroughly ventilated without exposing the patients to draughts.

The floors should be waterproof and as warm as possible, so arranged as to drain off the water which collects from the splashing of the patients, and also to make it comfortable for the nurses supervising. The walls should be durable, washable and waterproof as high as one can reach. Indispensable is a water-closet, which is to be located in the room, somewhat shielded. In procuring the bath tubs one must consider three points, the material of which they are made, their shape, and size. Tubs made of copper answer every requirement. The shape of the tub is of special importance for the following reasons: (1) It is necessary for the patients to remain in the bath as long as possible so as to receive the full benefit of it; (2) the bather's position in the tub should be comfortable with muscles relaxed and limbs in an easy attitude capable of being changed according to the patient's will, from recumbent to semi-recumbent or sitting upright; (3) the position, however, should be one of complete repose. Under these conditions only will a prolonged stay in the bath be at all agreeable or beneficial to the patient. In regard to the size of the tub, it should be sufficiently long to enable the patient to lie comfortably at full length and high enough for the water to reach about to the shoulders when in a sitting posture. All of these requirements are met by having a large tub, the head of which is inclined at an angle of about 30 degrees to the horizontal. Tubs of the above shape and size are, in my judgment, required where the continuous bath is to be given properly, for the patients must be able to sleep while they remain in the water. The tubs should be so placed that the supervision of the patients is comparatively easy and that the occupants cannot molest one another. Each tub should have a separate drain pipe, all of the pipes should be protected, the spigots and stoppers should be equipped with safety appliances which can be opened only by the attendants. Dr. Osswald could not carry out the plans for an ideal bathing equipment because of certain difficulties that were not apparent until after the installation of the plant. The only room available of sufficient size was in the basement and could accommodate from 8 to 10 tubs. After carefully considering the matter he decided to utilize it because it was accessible from violent wards without disturbing the other patients. The walls of the bath room are cemented to a height of 1.25 m., painted in pompeian red and above this a coating of plaster. The floor, which is of terazzo, is sloping and has cemented gutters for the tubs, which are placed with their heads toward the center of the room. The water supply pipes are covered with wood about 1.50 m. above the top of the tub, where they unite into a common inlet, and in order to prevent the patients from handling the stop-cocks they are enclosed in iron boxes specially locked; on these the corresponding words hot and cold are painted in prominent colors. The drainage is through a gutter. When the tubs are emptied care must be observed to prevent the backing of the water and flooding of the floors. This inconvenience may be avoided by placing a wooden grate between the tubs and a straw mat on the floor so that the patients may go to the toilet without stepping on the cold floor. Ventilation is

accomplished by an opening in the end wall so constructed that all draughts are avoided; this artificial ventilation is assisted by double windows constructed as follows: on the inner edge of the windows and projecting below them are placed sash windows considerably larger than the outer one, the upper part of this movable window is composed of alternate yellow and white opaque panes; the niche is of sufficient depth to allow the outer one to be easily opened; by means of this movable window an opening can be adjusted to meet the required demands. By this arrangement all direct draughts are avoided and by reason of the situation of the ventilators in the end wall the air is purified by suction and at the same time all disagreeable draughts eliminated. The ventilator has given a uniform temperature, being delightfully cool in summer and warm in winter, as well as preventing the condensation of moisture. The copper tubs which are in use have a deep curved brim around their upper margin and serves for the attachment of the invalid's table on which meals are served while patients are in the bath. This can be removed only by the attendants. In order to accustom patients to the bath or avoid their doing any damage, such as smashing windows or throwing missiles, a simple contrivance which can be adjusted to any bath tub has frequently rendered valuable service. This consists of an iron hoop bent to conform to the shape of the tub and clamped at the foot 1.5 m. from the top and having a number of brass buttons about 15 cm. apart to which a sail cloth cover with an opening for the head is attached; this is placed over the tub to prevent the patient from splashing water. Such an arrangement may be used as a hammock for invalid patients who have to be supported in the bath. These restraint baths are permissible only in cases of necessity and are of doubtful benefit.

In order to prevent scalding of the patients the temperature of the bath is always tested by an attendant before bathing; it should be from 35 to 38 degrees centigrade. In excited cases higher temperatures have proven beneficial. For bathing restless cases he is utilizing the bath rooms immediately joining the observation ward, or at times portable tubs on trucks are placed in the ward, so that the night attendant can supervise both. In exceptional cases two congenial patients may be placed in the same tub facing each other, separated by an invalid table; though this procedure is justifiable under certain circumstances it is hardly to be recommended as a routine practice. The cost of the plant was 3300 marks, "in view of the fact that we used the rooms at our disposal." A. P. H. and R. P. W.

Réflexiones à propos de cinq cas de psychose aiguë étudiés histologiquement. Par DR. A. DEROUBAIX. Journal de Neurologie, An. 9, p. 443, 5 Decembre, 1904.

In this article three cases are considered as acute delirium ending in death, one as paresis with absence of macroscopic lesions, and one as *mélancolie anxieuse* terminating in death by exhaustion.

After microscopic study it was found that this last case and one of the cases of acute delirium showed no difference in the anatomical picture ex-

cepting that the degree of arteriosclerosis was greater in the case of acute delirium. Both showed severe parenchymatous lesions, a neuroglia proliferation, but no mesodermal change nor inflammatory exudate.

The author has observed this same picture of parenchymatous change of varying degree, with neuroglia increase, in all of the psychoses, even chronic, and not paralytic, which he has studied. This fact corroborates the view of Alessi, Bischoff, Pritchard, and Alzheimer, that from a histologic point of view acute delirium properly called (mental confusion, generalized delirium) is a toxic lesion exclusively parenchymatous. It also corroborates the view held by Ballet, Klippel, and Thernite that from an etiological and histological point of view dementia præcox and mental confusion are similar. Further, the view of Deny that the dementia in hebephrenia is primary is confirmed.

Two of the cases of acute delirium, from a histological standpoint very closely resembled paresis, but certain somatic symptoms were absent in the clinical picture. In these were found sclerotic ganglion cells and the changes in the mesoderm which give to this disease the character of an interstitial lesion. While certain writers have found a perivascular infiltration, lymphocytes and even plasma cells, it may be asked if in this event the disease had not a paralytic base.

In proportion as the study of the histology of the cortex has advanced it has strengthened the view of Nissl that the influence of the leucocytes has been abused in lesions of the nerve centers and in the psychoses, and the anatomo-pathologic picture may be reduced to one of lesions of the parenchyma with neuroglia proliferation without involvement of the mesoderm, or of interstitial lesions, where the mesoderm was primarily affected, or the mesoderm and parenchyma simultaneously. In these last cases the mesodermal changes are shown in the proliferation and in the fibroblastic degeneration (as in the senile psychoses, *cérébroscélrose lacunaire progressive d'origine artérielle* de P. Marie, Grasset), or by the increase of fibroblasts and polyblasts (perivascular increase, polyblasts, plasma cells, mastzellen).

One may distinguish two extremes in the acute psychoses, two clearly marked forms, the paralytic or interstitial, and the non-paralytic or parenchymatous; and it is probable that in this last form we shall see established the clinical varieties corresponding to the clinical varieties of the chronic psychoses. In this manner the synthesis of Prof. Francotte will find an anatomo-pathologic basis.

It is also probable that a certain pathogenic unity underlies all these clinical varieties of the acute psychoses, in the sense that on the acute course and the fatal termination of a psychosis, just as in all the somatic affections, depends the action of the morbid agent, but especially on the lack of resistance, that is the natural or acquired weakness of the nerve centers, and that there is no other appreciable difference between the anatomical picture of the acute psychosis and the chronic psychosis.

W. R. D.

Zur Differentialdiagnostik negativistischer Phänomene. Von DR. OTTO GROSS. Psychiatrisch-Neurologische Wochenschrift, 10-17 Dezember, 1904.

Following are the author's conclusions: 1. The true katatonic (psycho-motor) negativism is a complex of phenomena which form the expression of a series of psycho-physical processes, which are separated from the ego-continuity, have no connection with the psychical process of a conscious personality, and cannot be made accessible to introspective investigation.

2. The disposition for resistiveness depends upon the general feeling of helplessness and the increase of this by any kind of stimulus. It is the appreciable, introspective, explicable expression of the conscious personality. Processes for separation of the consciousness can expect only a moderate result on account of the disposition for resistiveness, as they produce symptoms which increase the feeling of helplessness.

3. The "psychic" or total negativism depends upon the union of the katatonic negativism and the disposition for resistiveness. A. P. H.

Book Reviews

The Effects of Tropical Light on White Men. By MAJOR CHARLES E. WOODRUFF, A. M., M. D., Surgeon U. S. Army, New York, Rebman Company, 1905.

The *idée-mère* of this book, according to Dr. Woodruff himself, was announced by von Schmaedel before the Anthropological Society of Munich in 1895. It is that the dermal pigmentation of man was evolved for the purpose of excluding the dangerous actinic or short light-rays, which destroy living protoplasm. With our newly acquired tropical possessions, and the extension of American "spheres of influence" into warmer climates, the subject must be most pertinent and suggestive. Indeed all Anglosaxondom and teutonism seems to have started in to carry Caucasian civilization into equatorial countries, so that Major Woodruff's timely and learned work will command the attention of all governmental, administrative, and medical classes.

The book is divided into 13 chapters, and the titles of these may, in a way, serve to indicate the data for, and trend of the theories advanced:

- I. Zoological Zones.
- II. Ether waves.
- III. Action of Ether waves on Protoplasm.
- IV. Difference between Plants and Animals.
- V. Natural Defences of Animals from Light.
- VI. Known Effects of Light on Man.
- VII. Actinotherapy.
- VIII. Blondness of Aryans.
- IX. Evolution of Blondness.
- X. Results of Insufficient Pigmentation.
- XI. Results of Migration of Blond Races.
- XII. Results of Migrations to America.
- XIII. Practical Rules for White Men in the Tropics.

In his first chapter Dr. Woodruff points out the general law of adjustments to more or less definitely marked isothermal and zoologic zones which, within these lines, produces similar characteristics, colorations, etc., in animals and man. For instance, Simia, it is said, means the snub-nosed one, and all Simians are tropical in origin, and human babies have snub-noses, the adult nose being narrower and longer in colder climes, and shorter and more open in the tropics. This is one reason for the pulmonary troubles of the negro transplanted to the north. The amount of pigmentation of the skin follows a similar law, although the theory

should account for the comparative uniformity of the aborigines in this respect, whether living in Alaska or in Mexico and Peru. But the pigment of the cells below the outer layer do undoubtedly exercise a discriminating office in excluding or neutralizing the rays of the upper end of the spectrum. It is, however, questionable if the greater morbidity to which albinism is subject is not generally due to the lack of iris and retinal pigment, seemingly a small part of the general pigment-endowment, which unfits the animal or man for vision which is the *sine qua non* of activity and usefulness. But whatever the theory adopted as to the method of producing injury there can be little doubt that the shorter ether waves have in the long run a more destructive effect on living tissues than those of the longer or heat rays. Proof of this is abundantly supplied. The injurious effect of light upon bacteria is in direct corroboration, and that the majority of animals live in comparative darkness points to the same law. Even white feathers and fur are relatively opaque, and black pigmentation has the function of a reducer transforming as it were a high-tension to a low-tension current. Moreover, men have usually lived in dark houses, though again it must not be forgotten that the action of light upon the retina destroys its sensitiveness, diminishing the usefulness of the man, and even producing "moon blindness," etc. The old name for migraine was "sun-pain," and sufferers shrink from light, but migraine is due to errors of refraction, and light is avoided because it induces function and greater eye strain, not because even tropical light is unpleasant or harmful to an emmetropic eye. It would be interesting to know what proportion of hay-fever patients are blonds. In Chapter VII there is a capital epitome of medical literature on the effects of tropical light on white men.

Primitive man was brunet, not black, and so were the early Britons, but the Aryans were blonds, and they are conquering the brunets everywhere.

Practical results are reached in the conclusion that final exhaustion follows the first few months of stimulation of the Caucasian transplanted to the tropics. If this apepsia and debility increases Dr. Woodruff commends the moderate use of alcohol in these conditions. Neurasthenia, amnesia, sun pain, other neuroses, and even insanity often result from continued residence, all ultimately traced to the lack of protection from too much light. The general conclusion is reached that suicide depends somewhat upon the amount of light, the time of the year, etc. That the insanity rate in the Philippines is not greater is due to the fact that upon the approach of extreme neurasthenic and threatening symptoms the patients are sent home to the United States. All of this, of course does not prove that in our cloudy and northern climes there may be too little sunlight and that disease does not follow close upon this too little.

As regards the relative amount of sunshine the rule is deduced that, "the death-rate of a place is proportional to its sunshine, and inversely proportional to its latitude—other factors being eliminated," and the

people of Tacoma, Seattle and this region attribute their exuberant health, small death-rate, and morbidity, to every cause except the correct one—protection from sunshine. The order therefore is, Delay the destruction of the dwindling blonds. In the tropics opaque clothing is demanded, the color being comparatively immaterial, so it reflects as much heat as possible. Opaque head coverings, and darkened rooms, the midday siesta, etc., are also necessary. The best age of those going to the tropics is from 20 to 30, or 35, and none over 50 should think of life there. Prompt invaliding or pensioning are advisable upon ingravescence of neurasthenic symptoms. Dr. Woodruff laments the great ignorance and lack of interest in the subject of tropical hygiene, and the fact that the valuable experience of hundreds of physicians returning to the United States, is lost, and not placed at the service of the new men taking their places. The last words of the book require literal quotation:

"It is hoped that this investigation will take us a step nearer to the solution of that problem which is now confronting the American people as well as European nations—*The Conquest of the Tropics*, to give to its peoples that security of life and property, and that civilization and prosperity, which they cannot attain by their own unaided efforts, in an unsuitable form of government forced upon them by the Monroe Doctrine for our own welfare."

G. M. G.

Diseases of the Nervous System. By L. HARRISON METTLER, A. M., M. D., etc., (Chicago: Cleveland Press, 1905.)

The value which this work undoubtedly possesses as a treatise on clinical neurology is somewhat counterbalanced by the author's neuronistic dogmatism. One takes alarm first in the preface, where the opening sentence concisely asserts that "The Neuron Doctrine is now an accepted fact;" and when further it appears that in nearly a thousand pages following, the subject of nervous diseases is considered entirely "under the brilliant illumination" of this "accepted fact," which, moreover, is "universally acknowledged to be scientifically accurate" (1), one instinctively turns the pages for evidence. In lieu of evidence, however, one has to be content with the *ipse dixit* of the author, who "feels that the time has arrived for the frank recognition of this great doctrine, not merely in histology, but also in the greater field of neurology." It is, therefore, an unexpected consolation to find the author conceding, a few pages later, that the neurone theory "is not put forth as an infallible truth. It is open to future modification, and if need be to entire annihilation. . . ." So there is still room for those who have hitherto been unable to regard the hypothesis of Waldeyer as an established fact. To set authority against authority, we mention the remarkable critique of Nissl,¹ who in 470 pages of unequivocal language attacks the theory which in its widespread influence he considers "ein Unglück und eine Gefahr für den Fortschritt in unserer wissen-

¹"Die Neuronenlehre und ihre Anhänger," 1903.

schaft;" also Bethe's² recent statement of the present position of the neurone doctrine. These discussions will suffice to show that the phrase "universal acceptance," when applied to the neurone theory, is, at least, unfortunate.

The author reasonably criticises certain methods of classification in nervous diseases, such as those which treat separately affections of the brain, cord, and peripheral nerves, although allowance must be made for the obvious didactic advantages of such treatment. His own division of nervous maladies into *neuronic* and *non-neuronic* is quite as forced, and quite as open to criticism. It is simply an unhappy revival of *parenchymatous* and *interstitial*, and by the arbitrary metamorphosis of these two terms the author believes that the question has been wonderfully clarified. But here we must let him speak for himself. "Like a mariner without a compass, we have been buffeted about upon the parenchymatous and interstitial, the nuclear and protoplasmic, the fibrous and cellular, the vasomotor and molecular waves until we have almost despaired of ever reaching *terra firma*." The *terra firma* (!) which he has reached is that afforded by the neurone hypothesis. Neuropathology, unfortunately, is not yet sufficiently advanced to furnish unqualified support to the new-old classification.

Tabes and paresis are torn apart, the former falling among the neuronic diseases, while paresis is put down as a non-neuronic affection. The author states, however, that the nature of the primary lesion, in both maladies, is still undetermined, and that it is highly probable that a common initial process will be found to underly the two diseases. When, moreover, he adds as his belief that "the primary process is a degenerative one in the nervous elements of both diseases," one is at a loss to account for the epithet "non-neuronic" as applied to paresis.

In considering the subject of cerebral localization, reference is made to the work of Sherrington and Grünbaum, and their conclusions regarding the extent of motor representation are again given credit. Nevertheless, the author states that "the motor form corresponds with the central convolutions on either side of the fissure of Rolando, the adjoining parts of the frontal and parietal lobes, the paracentral lobule, and the supra-marginal gyrus." This view of a motor cortex in man occupying a wide indeterminate area on *both* sides of the central sulcus, is essentially that of thirty years ago, and has recurred inexplicably in text-books, in spite of the findings of Betz (1881), Hammarberg, Cajal, Sherrington, and Grünbaum, and others, which show that the precentral convolution alone, with its immediate antero-superior connections, is specifically motor.

As a text-book of neurology, the work furnishes a thoroughly adequate consideration of the symptomatology, etiology, diagnosis, and treatment of nervous diseases (vide p. 137 for qualifications of a physician to be suc-

²"Der heutige Stand der Neuronenlehre," Deutsche Med. Wochenschr., 1904, H. 33.

cessful in handling hysteria). The book tends, however, to bulkiness, and supplies an abundance of interesting observations and rhetoric which might be spared in an ideal practical treatise. C. B. F.

Geschlecht und Kinderliebe. Beiträge zur Lehre von den Geschlechts-Unterschieden. Heft. 7-8. Von DR. P. J. MOEBIUS. (Halle: Carl Marhold, 1904.)

This most recent number of this series is perhaps even more interesting than its predecessors. The book occupies 72 pages and is divided into three parts, the first treating of mother-love in animals and man, the second is a discussion of Gall's teaching, and the third treating of mother-love and skull size. The word *kinderliebe* is explained at some length and is probably best translated by mother-love, as it means love for children rather than love of children, which would be its more exact philological equivalent. Many instances showing the strength of this instinct, or "trieb," as Moebius prefers to call it, are given in the first part, and these are most interesting. The second part is given up to discussing the theory of Gall that this instinct was localized in the upper part of the occipital region, instances in proof of this being given in the third part, where a number of illustrations afford comparison between the male and female skulls in a number of animals. In these it is seen that while the skull of the male is invariably larger than that of the female, in the latter the portion of the skull above the occipital ridges is comparatively larger than in the skull of the male. Like all of the writings of Dr. Moebius, the style is delightful and a perusal of this work is recommended.

W. R. D.

Half-Yearly Summary

CALIFORNIA.—*Agnew State Hospital, Agnew.*—A number of improvements have been recently made at this hospital, it now being able to better provide for the sick insane than ever before, and much greater freedom is now given to all of the patients. All of the wards and the administration building have been thoroughly fitted out with new plumbing. A new cottage to accommodate 100 patients has been completed; also a steel water tower, and a new gas plant; besides many minor improvements having been made. There is in contemplation for early construction a new operating room and separate buildings for men and women which will be fully equipped with all modern facilities for the treatment of the acute insane.

COLORADO.—*Colorado State Insane Asylum, Pueblo.*—The last annual report, covering two years ending November 30, 1904, reports the erection and completion of two cottages at the men's department to hold 100 patients each; a wing at the women's department to hold 100 patients, an amusement hall, the installation of an electric light plant, a cold-storage and ice-making plant, and improvements in the kitchen and bakery. All of these changes have been carried through and are now practically finished. Other minor improvements are an addition to the laundry machinery and new steam tables, meat cookers, and urns, to the kitchens of both departments. It is of interest that the frame structure which was the original asylum, and which was near the location selected for the new wing of the women's building, has been removed to another part of the grounds, and is used as a carpenter shop and sleeping quarters for outside employees. The total number of patients remaining November 30, 1904, was 737.

ILLINOIS.—*Maplewood, Jacksonville.*—A training school has recently been established here. It has been duly incorporated and authority has been given by the Secretary of the State of Illinois to issue diplomas. The plan and scope of the school work is in accord with modern advanced ideas.

INDIANA.—*Central Indiana Hospital for Insane, Indianapolis.*—There are at present in this hospital 1082 patients. A number of improvements have been made, chiefly the installation of a new boiler plant, which has been in satisfactory operation for several months, and an addition has been made to the laundry. Numerous minor improvements have also been made. The medical colleges of Indianapolis, as in former years, pre-

sented a course of lectures to their students which were illustrated by the patients in this hospital, and the pathologist also gave a course.

—*Northern Indiana Hospital for Insane, Longcliff.*—There were in this hospital October 31, 1904, 946 patients. A number of improvements have been made, among these being a mechanical work shop of stone having a slate roof and a finished cellar 30 x 50 x 18 feet. It was erected at a cost of a little over \$2000. A store house has also been built near the railway siding, also of stone with a slate roof, and having an 8-foot basement. The size of this is 40 x 100 x 12 feet. It is equipped with elevator, scales, oil pump, portable shelving, and cost \$4962.60. An extension has been made to the employees' dining-room, adding 16 x 48 feet, in the form of a gallery suspended from the trusses over the north end of the central dining-hall. It is well equipped with sink, scullery tables, plate warmer, and serving benches, and cost \$450.00. A number of buildings have been added to the farm equipment, consisting of a stone cattle stable, bull stable, two brick silos, and granary. The equipment provides a corn mill, a root cutter, an ensilage machine, and an electric motor properly wired and equipped to afford 10 horse power. These additions cost \$3700. Refrigerating apparatus has been installed, so that at present there are six cooling rooms 10 x 12 x 16 feet, the total cost being \$4000. A new brick bakery, having slate roof and steel ceiling, 30 x 60 x 12, has been built and equipped with a ten horse power steam engine, a four-barrel dough mixer, a dough break, a flour elevator, sifter, a substantial, continuous-fire oven 11 x 13 feet, troughs, benches, bread racks, etc., at a total cost of \$4000. A coal shed, 75 x 85 x 17 feet, has been built adjacent to the boiler room. It is of brick with metal roof and is arranged for two railroad tracks passing through the building; has chutes into the boiler room, and has a dressing room for firemen. The total cost of this was \$4000. Automatic stokers have been installed in the boiler room. The laundry annex of two stories, 30 x 36 feet, of brick and with a metal roof, has been built at a cost of \$1500. Tile floors have been placed in a number of the bath-rooms, sculleries, etc.

—*Neuronhurst, Indianapolis.*—During the past year a new hospital has been built with capacity for fifty private patients. The plan, equipment, etc., is thoroughly modern. The course in the training school for nurses has recently been lengthened and is now three years instead of two as formerly.

IOWA.—*Mt. Pleasant State Hospital, Mt. Pleasant.*—A number of improvements have been made. The heating and water plant has been thoroughly overhauled and is now giving entire satisfaction. A new laundry and bake shop have also been installed. Many improvements are contemplated in the landscape gardening, so that an improved appearance of the grounds will result. The interior of the building will also be overhauled and new cisterns will be built. The experiment has been made of

employing women nurses among the male patients, and so far considerable improvement in the service has resulted.

—*Cherokee State Hospital, Cherokee.*—The last legislature appropriated \$70,000 for the erection of a fire-proof cottage for patients, and it is expected that this will be ready for occupancy by July 1. The third artesian well is now being drilled, and with its completion the water supply of the institution will be ample for a considerable period. Much work for the improvement of the grounds is contemplated for the present spring and summer. This includes considerable grading, the making of cement walks, and planting of ornamental trees and shrubbery. Four and six inch water mains will be laid, and when these have been completed all of the hospital buildings will have ample fire protection.

KENTUCKY.—*Eastern Kentucky Asylum for Insane, Lexington.*—There is at present under construction a bowling alley which will cost \$1400. A contract for placing nearly 800 feet of iron fence in front of the pleasure grounds has been awarded and the work will shortly be begun. Two 35-kilo Watt generators connected to two 60-horse power high-speed engines were installed in the engine room in December, the cost of these being \$3400.

MARYLAND.—*Springfield Hospital, Sykesville.*—There are at present under construction two new cottages, one at the women's group for convalescent patients and the other at the men's group for epileptics. The cottage for convalescents will be named the Warfield Cottage in honor of Governor Warfield. It will be built in conformity with the "open-door system" already established at Springfield. The accommodation will be for 75 patients. A number of home-like features have been incorporated in the general plan. The first story will include the large day-room, with handsome recessed fireplace and sun parlor, the dining-room, serving room, toilets, etc., and a spacious veranda 14 feet wide across the entire front. The second story will contain the dormitories for 70 beds and 8 private rooms, besides dressing rooms, baths, etc. The third story will provide the nurses quarters. A feature here will be the large social hall for the nurses. The building is colonial in design. It will be built of red brick laid in Flemish bond, with white marble and terra-cotta sills, arches, etc. It will be heated by hot water, lighted by electricity, provided with the most approved plumbing arrangements, with ample stairways, fire escapes, etc. The cost of the building and equipment will be about \$40,000. The cottage at the men's group will also be of brick, and will have a capacity for 75 patients. There will be a large day-room, dining-room, and kitchen on the first floor with dormitory on the second. The separate kitchen and dining-room for the epileptics will afford isolation for them, and insure better control of their diet, a *sine qua non* in the treatment of epilepsy. The cost of this building, including equipment, will be about \$20,000. In addition to these two buildings, the Buttercup

Cottage for female epileptics has been enlarged to the extent of twenty-five more beds. This is a frame building, and the cost of addition and equipment will amount to \$2000.

—*Sheppard and Enoch Pratt Hospital, Towson.*—The hydrotherapeutic plant of which mention was made in the last report has been completed and will be formally opened April 26, at which time the members of the Medical and Chirurgical Faculty will be in attendance at the annual meeting in Baltimore. The faculty will be invited to attend the opening, and an address will be made by Dr. Simon Baruch, of New York. The rooms present a very handsome appearance, the terazo floor and white enameled walls making everything very bright. The lounging room has a wainscoting of a rich red, which is very pleasing to the eye, and the colored rugs and couches of the same give a sufficiency of color to afford a pleasant contrast to the white walls which surround the patient while going through the bath. There is light gymnastic apparatus, such as wall weights, rowing machines, etc., and apparatus for vibratory massage to be used in conjunction with manual massage.

A part of the grounds near one of the creeks which flows through the hospital grounds is being excavated to form a lake, primarily as a reservoir for water to supply the boilers and laundry and the pool in the hydrotherapeutic establishment. It is located near the edge of the woods not far from the main drive through the hospital grounds, and will eventually be an object of considerable beauty. The shape is irregular and the total area covered will be about two acres.

An addition to the engine house has been built for the charging and storage of electric automobiles.

MASSACHUSETTS.—*Medfield Insane Asylum, Harding.*—An entire new power plant, in a new building and new location, has been built and machinery installed during the past year. Its location permits the delivery of coal from the vessel at New Bedford to the boiler doors without re-handling. Six new boilers, two large engines coupled to new generators, with new pumps and heating mains, have been provided. This plant is 1200 feet distant from the first point of distribution. It is calculated that \$5000 a year can be saved with this new plant in the running expenses of this department, which furnishes water, heat, light, and power.

A new building to provide for one hundred disturbed male patients is now in process of construction. It is, with the exception of the roof, of fire-proof construction. The walls are of red brick with yellow sand-stone trimmings. The partition walls inside are of brick and terra-cotta. The floors and stairs are of concrete and iron. The dining-room and shower baths are located in the basement. Two lavatories with closets and set bath tubs are provided for each floor.

Contracts have just been signed for an addition to the large general dining-room for women. This will be used for female employees. Work will begin at once. Alterations will be made in the third story of the

two general dining rooms, providing 44 more beds for employees that work outside of the wards. Two wooden cottages, each with a capacity for 18 patients, will be begun at once. These are for tuberculous patients, and one will be for male patients, the other for women.

The men's home for nurses and attendants employed on the male side was occupied during last month. It provides rooms for 65 attendants, has a large general sitting and reading room with writing room leading from it, and a small reception room. There is also a suite of rooms for an assistant physician, comprising a library, a sleeping room, and private bath, and another suite for a male supervisor. The basement is utilized for a pantry for preparing food and washing dishes for sick attendants, a large smoking and billiard room, with open fires, and a range of shower baths. In addition to these shower baths in the basement, there are five set tubs in the building. Some rooms are large enough for a man and his wife to occupy, and from six to ten married couples will be domiciled in this building.

—*Boston Insane Hospital, New Dorchester.*—Ten new wards have recently been erected at the women's department and have been occupied for several months. These have been very successful in relieving the crowded condition which had existed heretofore, and the new buildings have come up to all expectations. Plans are now under way for the construction of a hydrotherapeutic plant.

—*Massachusetts Hospital for Epileptics, Palmer.*—At this hospital the number of patients has now reached 500. The two new farm buildings have been occupied during the past few months and are proving to be well adapted to the purposes for which they were erected. Several minor extensions have been made during the winter in the green-house plant, a new ice house and several other small buildings have been added. It is intended, if an appropriation can be obtained for the purpose, to construct a fire-proof building capable of accommodating 100 men; this will contain a number of single rooms and will complete the classification needed in this direction, and it is hoped that in another year a similar building may be obtained for the women's group. Hereafter the extensions will mainly be by small cottages for single family groups similar to those that are already in use. Plans are under way for the removal of the barns which are at present in the vicinity of the main group for a distance of about a quarter of a mile to the vicinity of the farm group barns. One of these will be placed on a foundation, which is already prepared for it, and will be used as a storage house.

—*Massachusetts Hospital for Dipsomaniacs, Foxboro.*—At the present time there is a strong movement for the abolition of this hospital. Two propositions have been made for the use of the building, one being to give it to the Massachusetts Board of Charity to be used for crippled and deformed children; and the other to give it to the State Board of Insanity

with \$100,000 for the construction and furnishing of new buildings in order to meet the demand for 300 to 500 new beds which is made each year on this Board.

—*Westborough Insane Hospital, Westborough.*—The report of this hospital for the year ending September 30, 1904, states that there were remaining at the end of the fiscal year 842 patients. The training school graduated 23 nurses during the year, and consideration is being given to the advisability of extending the course of training to three years. The building for chronic disturbed patients, which has been under construction for some time, has been completed and occupied, and is admirably adapted to the needs of this class, making the nursing easier and making the patients themselves more comfortable than was formerly possible. Two of the cottages for women nurses have been completed and occupied, and a third is almost ready. There is at present being erected a building for acute disturbed cases; it is of concrete construction and practically fire-proof. It is so placed that the noisy patients will not disturb the patients occupying other buildings. Plans for buildings for male employees and nurses have been made and approved. These are similar in plan to those that are now used by the women nurses. A house for the superintendent is nearly completed. An operating room has also been built and is occupied. The fire-proof building for the pathologist will be begun when the old Peters House can be torn down; the employees now sleeping in this building being moved to their new quarters. The electric lighting plant has been greatly improved.

MICHIGAN.—*Oak Grove Hospital, Flint.*—This hospital has, in course of preparation, plans and specifications for a building for acute cases (men). The building is to be attached to the main group by a glass-enclosed corridor and accommodations are to be provided for ten patients. A special feature of construction is the direct opening of rooms for patients from a quadrangular room, 17 x 26 feet, lighted by a skylight. This arrangement permits all patients to be under the close observation of the night nurse at the same time.

MISSISSIPPI.—*State Insane Hospital, Asylum.*—The staff of this hospital has been increased by the appointment of a third assistant.

MISSOURI.—*St. Louis Insane Asylum, St. Louis.*—The prospects for relief of the overcrowded accommodations of this institution is becoming a real factor to the extent that a bond issue of \$9,000,000.00 is to be voted upon by the public, April 4: \$1,000,000 of this amount, if passed, is to be used in the erection of modern accommodations for the insane poor of this city. At present the city's insane are very much divided, there being 655 in the City Insane Asylum, 832 in the City's Poor House, and 97 in State Hospital No. 4. More recently the interest manifested by the medical profession and societies in the management of the eleemosynary insti-

tutions has assumed a more tangible basis; advisory and consulting committees have already been formed, the result of whose deliberations is to be submitted to the city officials. At present all of these institutions are departments of the health department, which is under the direct control of the health commissioner.

NEW HAMPSHIRE.—*New Hampshire State Hospital, Concord.*—In compliance with the Act passed by the state legislature in the year 1903 providing for state care of all the dependent insane of the state within a specified period, the legislature of 1905 made an appropriation of \$200,000 for the erection of a hospital building for acute insane as well as the care of the feeble and sick among all classes of the insane. The legislature also provided for the installation of six fire-proof stairways in the old buildings, for a house for employees, and for a storage building. Work on the hospital building will be begun at the earliest possible moment in the spring. The hospital building will have a capacity of 150 patients. It will be two stories in height and will have a central administration building containing rooms for a resident physician, also for the head nurse and assistant nurses. It is proposed to place the hospital building under the entire charge of women nurses with such orderlies for assistants on the male side as may be necessary. This building will be connected by the main buildings with a subway, but will be entirely detached in every other respect, and will occupy a sunny exposure facing the south about 250 feet distant from the nurse's home. The hospital building will be the first of a series of additions that will ultimately provide for the reception of all the dependent insane in the state.

NEW JERSEY.—*New Jersey State Hospital, Trenton.*—There is at present pending before the legislature a bill asking for an appropriation to make considerable extension to the present buildings. The continued crowded condition of this hospital renders such a step necessary.

NEW YORK.—*Buffalo State Hospital, Buffalo.*—There are being completed upon the grounds of this hospital four buildings: a residence for the medical superintendent; a residence for the medical staff; a home for one hundred men employees, and a chapel and amusement hall. These four buildings are of brick, and will cost about \$104,000. The three upper floors of the building, now occupied by the medical officers and the chapel, will thus be available for patients, and it is expected will accommodate about 150.

On the evening of March 6, 1905, at 11 o'clock, a fire broke out in the second floor of the three-story building adjoining the Administration Building, evidently having caught from the waste in a dust shaft, and working under the floor. The building is of three stories and contained about 166 patients, who were roused and marched quietly from their wards through the corridors connecting the adjoining building in which the fire did not exist. The wards were emptied in a few moments without injury,

confusion, or excitement, largely due probably to the regular daily fire drill which has been practiced. The fire was extinguished after cutting through the floor.

—*Long Island State Hospital, Flatbush.*—This hospital occupies buildings which were built by Kings county half a century ago and ten years ago leased to the state under the provision of a bill which permitted a lease for five years and gave permission of a renewal for a further period of five years. As this lease expires in October next, and the lease could not be renewed except by further legislation, some apprehension has been felt both by the State Commission in Lunacy and by the friends of the inmates of the institution that it might be necessary that the buildings be given up and the patients scattered among other state asylums. A bill will probably be introduced into the legislature in the nature of an enabling act, giving power to the state and city authorities to make an exchange of property. The proposition is made that the House of Refuge on Randalls Island, which is practically under state control, be exchanged for a portion of the property of the city now occupied by the Long Island Hospital in Flatbush. This was first suggested by Mr. Alexander E. Orr, who is president of the board of managers of the House of Refuge, and president of the board of visitation of the Long Island State Hospital.

—*Manhattan State Hospital, Central Islip.*—Since the last report a number of improvements have taken place at this hospital. A new amusement hall has been completed and occupied. It is of wooden pavilion structure and has a seating capacity of 1200, one end being arranged with a stage for theatrical purposes, the other arranged for religious purposes for the Catholics and Protestants. The administration building is nearing completion. This building is situated midway between the two colonies and has three stories, the first floor being used for administrative purposes, and the remainder of the building for steward's quarters and clerk's quarters. Plans and specifications have been completed and bids advertised for the construction, heating, plumbing, and electric lighting of the new dining-room and attendants' home. The first floor is to be used for a dining-room for the acute patients, both male and female; the second and third floors will be for quarters for 80 attendants and nurses. The buildings will be situated close to the acute service, the dining-rooms being connected by corridors with both the male and female departments. This will insure a separate dining-room for acute patients, will allow of special service, and will be convenient in many other ways.

—*Manhattan State Hospital, East, Wards Island, New York City.*—Since the completion, in the autumn, of the new operating room in the East Building, the gynecological service has been extended and operations upon female patients are now performed from two to three times a week. Major surgical operations are also regularly performed upon the male patients with most gratifying results.

The camp for the tubercular patients has been again successfully maintained throughout the winter, still demonstrating its usefulness as a means of continuous isolation, and at the same time affording the employment of a therapeutic measure of the most valuable character.

Recently a number of wards including the hospital for sick and bed-ridden patients have been renovated, thus improving the sanitary conditions and adding greatly to the comfort and cheerfulness of the surroundings.

—*Manhattan State Hospital, West, Wards Island, New York City.*—The medical work of this hospital has been steadily advancing along the lines set forth in the last Half-Yearly Summary. Three or four staff meetings are held regularly each week for the consideration of recent admissions, at which time preliminary study and diagnosis of cases are made. A few weeks following the admission of each patient a written summary is presented, covering the case in all its bearings, when a final diagnosis is made.

Once each week convalescent patients are considered at staff meetings, their histories are carefully gone over, and conclusions formulated as to the conditions under which they may be discharged, or whether their cases should remain longer under observation. This method of carrying out the psychiatric work enables all members of the staff to become familiar with every patient.

The mechanics' shop on the first floor of the men employees' home has been transferred to other quarters, and the room has been appropriately finished off and converted into an industrial department for the women patients. Here patients are brought who are not inclined to be very active in the matter of employment. They are placed under the direction of nurses who endeavor to instruct them in the various branches of work. It thus becomes an important element in the treatment of these cases. Cases of dementia præcox who are apathetic and resistive are here encouraged and gradually taught to employ themselves, and for the short time this department has been open, the results have been gratifying. In this industrial department about 400 women patients are now employed daily.

Owing to the overcrowded condition of this hospital the State Commission in Lunacy suspended admissions from February 8 to March 15, except a limited number for the purpose of study. All other patients were committed to the Manhattan State Hospital, Central Islip.

The special work has been continued as heretofore by Drs. Kemp, Rose, and Graham-Rogers in gastro-intestinal investigations, and Dr. Thomas Satterthwaite has given demonstrations of the use of Nauheim-salt baths with the exercises prescribed in heart difficulties. Dr. Robert T. Morris gave a clinic on abdominal surgery. These gentlemen have shown much enthusiasm in their various departments, and are giving valuable aid in the medical work of the hospital.

We have inaugurated a systematic course of investigation into gastro-intestinal troubles, charting our findings in all cases admitted, and here-

after more thorough attention will be given to the study of auto-intoxication.

The gynecological work has been carried on as heretofore by Dr. LeRoy Broun, assisted by Dr. Rawls and the hospital staff.

The two frame pavilions constructed last year for use as camps for tuberculous patients have been occupied during the winter weather, and proved to be comfortable and satisfactory for outdoor treatment. The continuous bath has been used more extensively for cases of mental excitement, and the findings show beneficial results in nearly all instances. At the present time there is a patient undergoing this treatment who has been in the continuous bath for weeks, both day and night. This case is an unusual one, but already shows some improvement. In this connection it seems proper to state that by the use here of the hydrotherapeutic treatment the administration of sedative medicines has been materially reduced.

A new solarium built adjacent to the east side of ward 17, similar in all respects to the one built to connect with ward 21, is now completed. It is one story high and has a capacity of 40 patients. It makes a cheerful ward and fully meets the requirements of the hospital for that class of patients.

The new amusement hall was opened on February 9, and has a seating capacity of about 800. Several vaudeville entertainments have already been given, and three or four weekly dances and concerts are held for the patients. This hall meets a want long felt at this institution, and its usefulness is becoming more and more apparent. A most excellent stage, constructed on modern plans, and supplied with suitable scenery, is built at one end of the hall.

At the present time a large addition is being constructed at the south end of the staff house, and certain alterations in the old staff house are being made. When completed, this will give much more room for the accommodation of the large staff of officers. In the meantime, the majority of the members of the staff are finding quarters in the superintendent's former residence at the south end of the island.

The following improvements have been completed or started since October 1, 1904:

A new amusement hall and an addition to the superintendent's cottage have been completed, the heating, lighting, and plumbing being installed by the hospital.

A cement conduit for steam and return pipes from the annex to ward 34, under way on October 1, has been completed.

A fire pump, 12 x 8 x 12, has been installed in the power house and the necessary lines installed to connect it with all buildings over two stories in height, to provide better fire protection for these buildings.

Two steam tables have been purchased and installed in camps C and D, and one has been ordered for the new solarium at ward 17, and an old one has been installed during this time near the solarium at ward 21.

A large addition to the staff house is now being erected, the construction, plumbing, and heating being done by contract and the electric wiring by the hospital.

A new solarium at ward 17, which was under way on October 1, has been completed and the hospital has installed heating and electric wiring.

—*Rochester State Hospital, Rochester.*—This hospital is just completing a group of buildings, consisting of a new central boiler house, store and bakery, and an extension to the laundry, an infirmary building for 300 patients, and a building for 350 chronic patients; also a central hospital building, equipped with a complete system of baths, electric appliances, dispensary, operating rooms, etc., for the treatment of acute cases, and arranged in six cottages with 10 small wards to accommodate, in all, 50 men and 50 women patients. Located in the center of this group is a large new kitchen so arranged as to easily distribute food to the different dining-rooms through the corridors. The rooms on the mansard floor of one of the old buildings are being repaired to be occupied by women nurses.

—*Rome Custodial Asylum, Rome.*—During the past half year a training school has been established for the attendants which is entirely distinct from that for the nurses. The object of this school is the training of the employees in the proper physical care and educational methods applicable for the feeble-minded, more especially the so-called custodial cases, and the training that is required of an attendant for chronic cases, such as the bed-ridden paralytic, which are met with outside of hospitals. A merit system has been instituted among the inmates and a daily record is kept of all the brighter patients, who are the ones placed on this merit system. These are rewarded for good behavior and good work, and are given demerits for bad work and refusal to work. Each male inmate's labor is valued at 15 merits per day, and each female's labor at 10 merits per day, a merit representing one cent. At the end of each month each inmate's account is balanced and a little cash is given the inmates if any is due them. All of the inmates on this system pay for their own clothing through merits and for any luxuries which they have.

Dr. Bernstein, the superintendent, states as follows:

"During the past year we have become convinced that it is very desirable that at least in the custodial institutions for feeble-minded, the two sexes be separated and placed in different institutions, as we are very sure as a result of such separation both males and females could practically be allowed much larger liberties about the institution, all being oftener thrown on their own resources as regards self-reliance, as a result of which their judgment would be much developed and they would be able to do much better work about the institution, and thereby contribute much more toward their own support.

"As a result of such separation of sexes, with the ground sufficiently extensive about the institution, much more could be accomplished in the

way of self-support, and this, too, with a much smaller number of employees than is at present required. In this institution we are convinced that the farm-colony system should be adopted for the future provision for an increased number of male inmates. We propose to put 20 to 30 of the brighter males on each farm with a farm hand to assist these brighter male inmates. We consider it of the greatest importance in isolating them from the large mass of lower-grade cases, and in increasing the facilities for these brighter inmates toward the support of the lower-grade cases in the future, that they could be produced on such farms. We feel that this plan would be decidedly beneficial to the brighter cases, increasing their interests, and thus keeping them from mischief, contracting habits, etc.

"Our population at the present time is 710. Besides the feeble-minded waiting admission to this institution, we have at present, contrary to law, cared for in county, town, and village, in addition to this, there are also about 200 cases in the State School, which should be cared for in a purely custodial institution."

"In addition to the above, we have on file at the present time awaiting admission, most of which cases are at present in homes, orphanages, schools for the delinquent, etc."

—*Utica State Hospital, Utica.*—The medical work of the hospital progressed very satisfactorily along the lines pursued by the Institute. Two members of the staff availed themselves to take a course of instruction at the institute. The course was three months and proved a great assistance in their work.

It is proposed to utilize the present quarters of the staff in the administration building for patients. To be made a superintendent's residence and staff building, to be erected on the hospital grounds, and the construction of the buildings will probably be ready for occupancy some time in the coming summer.

The new central kitchen is completed and is a very good one and one which has been long needed.

Two or more additional buildings for patients will probably be erected soon and the capacity of the institution increased by 500 to 1000.

—*Willard State Hospital, Willard.*—The hospital has been free from infectious disease during the past six months, which has been more or less prevalent since 1899, made one instance during the present month (March), which since last July, the hospital having been entirely free for nine months. An epidemic of measles broke out February 1st, largely to the south wing (women) in the main building, of two weeks thirteen patients and three nurses devel-

These patients were at once transferred to the Isolation Hospital, which was completed last November. During the present winter there have been five cases of erysipelas. Patients suffering from tuberculosis, who had been living in tents during the summer season, were moved into the wards set apart for them in permanent buildings in December, the weather having become too severe to permit of their longer treatment outdoors. It is expected that they will again occupy the tents before the end of April.

There are now two agricultural colonies, one situated at Hillside, containing 25 patients of the farming class. These colonies have been adapted from old farm houses remodeled and enlarged, and are situated about a mile from the main building. The total acreage of Willard being something like fourteen hundred acres, the necessity for such colonies is at once apparent. Apart from the convenience which they afford, by virtue of their location, respecting the farm work, a more natural condition of living is secured to the patients. It is in the direction of the "family care" or "boarding out" plan. Another colony should be established at the Lake Farm during the current year.

A contract was recently let by the Lunacy Commission for the installment of galvanized iron cold air ducts in the basement of the main building, and this work is now under way. The object is to secure better ventilation to all of the wards in this building by supplying the indirect-heating system with air brought directly from the outside instead of from the basement itself. A contract has also been let for the installation of new plumbing at The Pines, but owing to a dispute which arose regarding it, there has been some delay in commencing the work. A number of minor improvements have been made during the past six months, among which may be mentioned the erection of a refrigerator in the mortuary; new metal stanchions in the cow barns; a disinfecting washing machine added to the laundry equipment; a new dough-mixer for the bakery; steel ceilings for the central corridor of the main building and the operating rooms.

—*The Craig Colony for Epileptics, Sonyea, N. Y.*—The census of the Craig Colony for Epileptics on March 13 last was 1002, and by next June it should be 1050.

Two new cottages for 20 to 25 patients each should be opened in the women's group in May.

The addition to the hospital now going up, at a cost of \$16,000, is almost ready for occupancy. It contains a large library room for medical books and scientific publications; a fire-proof vault for hospital and medical records; additional offices for members of the medical staff; consultation and waiting rooms for patients; and a modern up-to-date hydrotherapeutic room fully equipped for the purpose. It is expected that the latter will prove a valuable adjunct to other forms of the treatment now in use.

The colony is interested just now in an autopsy bill that is before the legislature. The purpose of the bill is to give the colony the right to make autopsies on the bodies of all indigent patients who die at the colony, and who have been supported therein wholly at the state's expense.

The state architect has completed plans for six additional cottages to be built this summer, the six cottages to hold approximately 200 patients. The largest of them will have 40 persons in them, the smallest 20. The per capita cost of construction is not to exceed \$450.

Preliminary preparations are under way for celebrating, next August, the tenth anniversary of the founding of the institution.

—*Bloomingtondale Ten Years at White Plains, N. Y.*—The year 1904 completed the first decade that Bloomingtondale has been at White Plains. It left an old fashioned institution in New York, comfortable but not convenient, which represented the gradual accretions through 75 years of unsystematic growth, where good work was possible, at an unnecessary expense of effort, and where new departures were contra-indicated by a prospect of abandonment of the site. While the departure was postponed for various reasons, time was gained to fully mature, and eventually to carry out at White Plains, plans for a modern model, and convenient establishment in a new neighborhood. Ten years of good work done at the new place justifies the change of location, and the manner of the new development. At the new place there were no necessary limitations, either in space, funds, or policy, to the installation of anything approved, or anything likely to be advantageous in treating and caring for patients.

Since the work of Bloomingtondale was transferred to White Plains, there have been introduced a training school for attendants, patients' school, therapeutic baths, ample facilities for physical culture, electric, dental, ophthalmic and gynecological departments, a clinical and pathological laboratory, cabinet making, and other manual training opportunities, salt shore bathing and a large variety of individual outings, etc.

With this variety in means of treatment there has been a larger amount of individual freedom, and initiative, and a consequently greater proportion of cure and improvement, and a marked retardation of the mental enfeeblement, which, as a rule, terminates chronic insanity.

Over 1400 persons have enjoyed the benefits of the new Bloomingtondale, and fully one-third of these got well enough to live away again, while about 300 got as well as ever. During the 10 years that Bloomingtondale has been at White Plains it has done a large amount of charitable work among the wholly or partially dependent insane of the community. The generous gift of Mrs. John C. Green has given it \$75,814.19 to so dispense, where it would best relieve suffering among insane women, and Bloomingtondale itself, from its own earnings, has bestowed over \$400,000.00 additional on the worthy and preferably curable insane of both sexes. Its policy has been to aid, for a limited time, as many hopeful cases as possible, but to retain chronic and hopeless cases only to a limited extent, and through these limitations to scatter its beneficence over as wide a field as possible. Nearly 900 persons have shared its pecuniary assistance at White Plains. While far from experimenting on its patients, no known and approved method to benefit them has been neglected, and the results have been very gratifying, and the figures encouraging, when we consider the proportion

of cases, hopeless from the beginning, which such a metropolitan hospital must admit.

Bloomingtondale has never entered into any visionary departures, or medical advertising, but has always pursued a dignified and liberal course toward its patients and the surrounding community, and it has continued to draw patients of the best class, in larger numbers year by year, thus increasing its ability to benefit those needing its aid. At the present time no other hospital is better prepared to do enlightened humane work among the insane, or for those upon the border line, and its recent and prospective additions of attractive detached villas more and more draw patients who are accustomed to have every comfort, and can in these liberally conducted retreats have almost every freedom, while also having every facility a well-equipped hospital affords.

The main buildings for patients, which are connected over-ground, afford a large variety of accommodations of a very nice and comfortable kind.

The detached villas, which are connected by subways, contain connecting rooms and adjacent baths, and all those surroundings which are so well exemplified in the modern hotel, and afford great freedom, comfort, and seclusion with the fullest hospital treatment. The facilities in these respects are gaining wider appreciation all the time, and the occupants of these villas are largely persons who have had friends at Bloomingtondale, or who have themselves enjoyed previously these very modern adjuncts to a hospital for those suffering a moderate amount of mental fatigue, or depression. These latter often return voluntarily, or send their friends when the occasion arises.

The latest addition to these detached villas at Bloomingtondale, the James H. Banker Memorial Villa, with its suites of rooms and adjacent baths, it is expected, will be ready for gentlemen soon after this report is issued, and will be a model building for its purpose.

—*The Long Island Home, Amityville.*—During the last six months a commodious brick boiler room with two boilers has been constructed.

—*Dr. Bond's House, Yonkers.*—A number of improvements have been made. The house has been repapered, repainted, and newly carpeted. A billiard, pool, and card room has been built; fire escapes have been put up, and fire extinguishers have been fully supplied, while a city fire-alarm box has been placed directly in front of the house. The hydrotherapeutic apparatus has been increased and the hot water supply apparatus has been considerably improved. An interior telephone system has been installed, connecting with the buildings on the place.

NORTH CAROLINA.—*State Hospital, Goldsboro.*—A new smoke stack 105 feet high has been erected. The old kitchen has been demolished and a three-story brick building, 97 feet long has been erected in its place. The first story of this has a cement floor and has been thoroughly refurnished as a kitchen and bakery. The second story will be used as an associate

dining-room; and the third story will be used as an asser in contemplation, the erection of a three-story building modating 100 female patients, and of building, a spur, railway, immediately opposite this hospital to a point near a distance of a little over half a mile. This will save cost in hauling coal and handling building supplies.

OHIO.—*Athens State Hospital, Athens.*—From the report for the year ending November 1, 1904, it is learned that a made for the erection of a new carpenter shop, upholster steel smoke stack, in addition to the electric light purchase of land. All of these appropriations have been the purposes specified.

—*Cleveland State Hospital, Cleveland.*—A new psych has been opened and is occupied by forty patients. It assistance in caring for the acute insane, permitting classification than has been possible heretofore. There are in each ward with two day nurses and one night nurse. Each ward is arranged for special diet independent of the so that the nurse may prepare food for those that cannot dining-room. Hydrotherapy and electrotherapy will be The superintendent has recommended to the board that consultants be appointed including two surgeons, one in ophthalmology, gynæcology, and dentistry. The building which an appropriation of \$75,00 was made in 1903, will October, 1905. This will have a capacity of 200 beds and crowded condition of the wards. \$7500 was also appropriated for cold storage plant and a pathological laboratory, but as the recently available, work has not yet been commenced. As of the laboratory the staff will be increased by the pathologist. A number of minor improvements and repairs made. As the hospital is under the necessity of purchasing products, which adds considerably to the per capita cost, has been made that a suitable tract of farm-land be purchased of financial benefit and also as a means of occupation for

—*Columbus State Hospital, Columbus.*—The camp for insane, which was in successful operation in 1903, during 24 patients were treated, was again successfully operated with increased capacity, 48 women and 36 men. The mental improvement has been similar to that observed during the There were six sleeping tents for women and two for men the accommodation of the nurses; a large dining-room for the assistant physician; a lavatory tent and a small covered bed linen and articles of wearing apparel; all together treated, 59 women and 37 men, and all of the cases ex

were in the third stage of the disease, were benefited. The camp was operated from May 2d, to November 12th, and efforts are being made to obtain sufficient funds to segregate this class of cases in winter as well as in summer. The death rate for tuberculosis was less this year than formerly. A cottage for the chronic insane, accommodating 110 patients, has been opened and in operation for several months. This is complete in its arrangement having an individual culinary department. There is being installed in the basement of Greer cottage, which is to be devoted exclusively to the treatment of curable cases, a complete hydrotherapeutic plant including an electric light cabinet. The physical culture class which has been organized among the female patients has been found to be of great benefit, giving a great deal of pleasure, as well as considerable physical benefit being derived from the exercises. The staff has been increased by the appointment of an extra interne; this being necessary on account of the increased number of patients being under treatment. A training school for nurses continues in successful operation and the results have been shown in greatly improved nursing.

—*Long View Hospital, Cincinnati.*—A number of new improvements have been made in this hospital, a new laundry building being the greatest. In this all machinery will be operated by electric motors and gas will be used to heat hand irons and all machinery requiring heat, as this is thought to be more certain and less expensive in operation than electricity. The east end of the basement of this building will be used for storing vegetables. The other improvements consist of an addition to the green house, considerable grading, the making of cement walks, and a number of other minor improvements. The officers' kitchen has been removed from the extreme eastern end of the basement to a large room under the dining-room and the old kitchen has been fitted up for the proper storage of milk, being cooled by brine from the ice tank.

—*Cincinnati Sanitarium, Cincinnati.*—The board of directors are considering plans for the erection of new buildings as the present buildings are considered inadequate. Several rooms are now being fitted up for a clinical laboratory. Contracts have been awarded for lighting the grounds and amusement hall with electricity.

OREGON.—*Oregon State Insane Asylum, Salem.*—There were remaining in this hospital, September 30, 1904, 1373 patients. The daily average population for the preceding biennial period was 1321.21. The crowding of this hospital rendered it necessary that the care and treatment of the Alaskan insane be discontinued and therefore these patients were transferred to the Portland Sanitarium. Among the improvements made, are the construction of two modern barns, one for horses and one for cows, to take the place of the old one which has become inadequate, and new hog barn 50 x 100 feet. This is connected with the basement track by an elevated car track and is located at a considerable distance from the

other buildings. Three new brick lavatories have been constructed and supply nine wards with modern bath equipment. A new park for women was built on the back lawn and affords pleasant and safe grounds for out-door exercise of those patients whose condition renders it undesirable to have on the front lawn. Fire walls have been constructed in the attic as an additional security against fire. One new enclosed cottage has been constructed at the cottage farm. It consists of two wards having accommodations for 42 patients each. An extension was also made to the congregate dining-hall 40 x 40 feet, two stories high, the upper floor being used for sleeping apartments for employees. The engine room and bakery have also been enlarged by additions.

—*Crystal Springs Sanitarium, Portland.*—A new building 40 x 140, two stories high, to accommodate 60 male patients, will shortly be completed. A part of the basement will be used as a laundry. The water supply has been increased. Considerable work has been done on the grounds, new roads being constructed, and the appearance has been considerably improved. A business manager has been appointed who relieves the medical staff of considerable business details.

PENNSYLVANIA.—*State Lunatic Hospital, Harrisburg.*—The cold storage building is finished and in use. Two tons of ice is supplied daily, the animal heat is removed from eight beef carcasses daily, and there is a storage capacity for 12 carcasses. In addition, boxes are cooled for vegetables, milk, and butter. The cellar and attic are connected by an electric elevator. The bakery and store rooms are in close proximity joined by a covered porch, and connection is made from each of these buildings to the kitchen through underground inclines and covered ways. All material is delivered to the cold storage building and store rooms and from there advanced with but one handling to the kitchen where it is prepared for subsequent distribution, thus securing great economy in handling the raw material. Two buildings have been erected for patients, one for recent and acute cases, two stories in height, which in addition to the necessary rooms, lavatories, etc., will contain operating and electrical rooms and a hydrotherapeutic apartment which is to be equipped with the latest appliances. The building is designed for 40 patients and has at each end on the first floor a porch 12 x 30 feet in size. This building is connected by underground ways at one end of the kitchen, at the other 80 feet distant is a second new building which is to be used for convalescent and periodical patients. This is built in an L-shape, has a large bay window at the exterior angle and a stairway at the interior angle. It is two stories in height and has a 12-foot corridor extending through the building. It contains 42 single, 11 two, 2 three, 1 four and 1 fourteen bedded rooms accommodating 88 occupants. A third building built for the dangerous class of patients is in the form of a quadrangle, two stories in height, with an inner court 80 x 90 feet. Rooms, 14 double and 64 single, for 92 occupants are built on the outside and open into 12-feet

corridors, which look into the court, the walls of which are built of light-yellow brick. These houses are so constructed that all parts at all times will have plenty of light. All these buildings are of fire-proof construction and have only recently been finished.

—*State Hospital for Insane, Norristown.*—A number of the new buildings which have been under construction at this hospital have been delayed by the strikes of last summer. The nurses' home for female attendants is about ready for occupancy. The pathological building and morgue are under construction. The building for the swine and poultry and for the soap factory is very elaborate and complete and gives great satisfaction.

—*Philadelphia Hospital, Insane Department, Philadelphia.*—During the past year a vertical filing system has been installed for keeping histories of patients, each patient being kept in an individual holder and being a typewritten record from stenographic notes made during a visit to the patient. The value of this has been further increased by index cards which are crossed indexed.

RHODE ISLAND.—*Butler Hospital, Providence.*—A new hydrotherapeutic bath has been installed in the basement of the Weld house which is a counterpart of that already installed in the Goddard house. Italian marble wainscoting adds to the beauty of this bath. Fire-proof stairways have been provided for the north wards of the male and female divisions. All of these improvements have necessitated considerable structural changes and advantage was taken while doing this to thoroughly overhaul the bath-rooms and lavatories on these wards. Automatic sprinklers have been placed in the laundry and in several other places where their presence was deemed necessary. A dough-mixer has been installed in the bakery. New machinery has been installed in the laundry. Other repairs such as new floors, steel ceilings, painting and refurnishing have been made.

TENNESSEE.—*Lyons View Hospital, Knoxville.*—There is now being built a wing addition to the west end of the women's block which is capable of accommodating 100 patients and it is expected that it will be completed by the 1st of June. As the hospital is on the Kirkbride plan, the arrangement can be easily imagined. The addition is of mill construction to guard against fire, there being no ceiling anywhere, the beams being finished in bright pine. There is a large sitting room at the end of each ward and a general dining-room in the basement. The cost is \$33,000.

TEXAS.—*North Texas Hospital for Insane, Terrell.*—The first class to graduate from the training school of this hospital, which was organized two years ago, will hold its closing exercises about May 10. There are 10 nurses in the graduating class; in the junior class there are 50. There has recently been built an infirmary with a capacity for 55 female patients and their necessary attendants.

—*Dr. Moody's Sanitarium, San Antonio.*—There was built and equipped in 1904, a two-story, fourteen-room building which is being occupied exclusively by men. Also a cottage for isolated cases which is situated at a distance from the other buildings. The male building is over 200 feet from the original building, which is now being occupied exclusively by the women. Dr. T. L. Moody of San Antonio, has recently been made consulting physician, and spends several hours daily at the Sanitarium.

VIRGINIA.—*Western State Hospital, Staunton.*—A number of improvements have been made during the last year; electricity has been installed for lighting purposes and it is contemplated making the electric plant of sufficient capacity to run all machinery used in the institution. A large store room has been erected and is in successful use. All of the old brick walks about the grounds are being changed to granolithic, adding greatly to the appearance of the grounds. As usual the hospital has been greatly crowded during the past year.

—*Southwestern State Hospital, Marion.*—The report of this hospital for the year ending September 30, 1904, contains in addition an historical sketch of the hospital, which is of considerable interest. Three male and three female attendants completed the two years' course in nursing and were given diplomas last July. The course is most successful and the nursing has been much improved since the organization of the training school. A number of improvements have been made, among these being the installation of an internal telephone system, the construction of a railroad switch, a new floor in the amusement hall, the construction of a new carpenter shop, a new engine in the electric room and a number of other minor improvements. There were remaining in the hospital 472 patients.

WASHINGTON.—*Eastern Washington Hospital for Insane, Medical Lake.*—The last legislature passed a law removing the defective children from the school for defective youths and placing them under the management of this hospital. An appropriation of \$50,000 was made for a building to be used for this purpose and the construction of this will be begun shortly. It is expected that it will be completed by fall when all defective children confined in other institutions will be removed to this hospital. A training school will continue the education of those who have sufficient mental ability to gain from such instruction. The building that is now occupied by defective children is to be used by the blind, deaf and dumb of the State. An appropriation of \$55,000 was also made for a new building for insane patients and the first attached cottage will be erected during this summer. Hitherto all additions have been in the form of wings. Numerous improvements in the grounds have been planned. This hospital has a short training course for nurses.

CANADA.—*Asylum for the Insane, London, Ontario.*—Within the last two years a number of changes and improvements have been made in this

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institution, having in view the better care and comfort of both patients and employees.

As the water supply had hitherto been imperfect, a persistent effort was made to build a suitable reservoir which would supply pure water and and plenty of it for all time. This has been accomplished after the work had occupied three whole seasons. The work was done almost entirely by hospital labor, and at the end of last autumn there was finished one of the best reservoirs in the province. It is over 300 feet long and about 100 feet wide and 109 feet deep. It is built of cement on the bottom, cobble stones laid in cement up the sides, with a wide cement curb around the top which is surmounted by a gas pipe and wire-gauze fence. The whole making a very pretty appearance which will be improved by the laying out of the grounds with trees, etc. This winter it has furnished an abundant supply of beautiful spring-water ice, twenty inches in thickness. Besides storing all needed for hospital use, \$200 worth was sold.

The large central building of the new infirmary has been converted into a nurses' home, chiefly for those nurses who work on the worst halls of the institution. This is found to be a great improvement for about 25 nurses. A nurses' training school has been conducted for the last three years and has graduated ten nurses. The course has recently been lengthened to three years. There are now 30 students. A good deal of operative surgery, both general and gynaecological is done here and the staff are impressed with the advantages in every way. The capacity of the laundry has been doubled by a new building which is furnished with the most approved machinery and laundry furniture, including a large sterilizer. The building of an isolation hospital for tuberculosis cases has been urged for the last three years, but as yet the government has not appropriated the money necessary. An addition was made last autumn to the estate, by the purchase of 235 acres of land adjoining the asylum grounds, making now in all 535 acres of good agricultural land.

Appointments, Resignations, Etc.

- ADAMS, DR. G. S., promoted to be First Assistant Physician at the South Dakota Hospital for the Insane, Yankton, South Dakota.
- APPLEBY, DR. SCOTT, formerly Third Assistant Physician at the North Texas Hospital for the Insane, Terrell, resigned to enter private practice.
- BARKER, DR. EDITH A., formerly Pathologist at the State Hospital for the Insane, Norristown, Pa., resigned.
- BELL, DR. E. W., formerly Second Assistant Physician at the Asylum for the Insane, London, Ontario, Canada, resigned.
- BEST, DR. BLANCHE, formerly Assistant Physician at the State Hospital for the Insane at Warren, Pa., resigned December 15, 1904.
- BOND, DR. HUNTER A., formerly Assistant Physician at the Manhattan State Hospital, West, Ward's Island, New York City, died November 13, 1904. "In the death of Dr. Hunter A. Bond, the hospital sustained a great loss. The doctor had been in the service of the hospital since February 1, 1897, but for some months prior to his death was in ill health. He was conscientious and painstaking in his work and highly regarded by all with whom he was associated."
- CALDWELL, DR. JOHN A., formerly Junior Physician at the Cincinnati Sanitarium, Ohio, resigned to enter private practice in Cincinnati, October, 1904.
- CAMPBELL, DR. EARL M., formerly Assistant Superintendent of the Upper Peninsula Hospital for the Insane at Newberry, Michigan, appointed Superintendent April 1, 1905.
- CHAMBERLAIN, DR. GEORGE L., formerly Medical Superintendent of the Upper Peninsula Hospital at Newberry, Michigan, resigned April 1, 1905.
- COHOON, DR. E. H., formerly Fourth Assistant Physician at Mt. Pleasant State Hospital, Iowa, promoted to be Third Assistant Physician.
- COLBY, DR. F. B., formerly Assistant Physician at the Boston Insane Hospital, Mass., resigned.
- CORT, DR. PAUL L., formerly Third Assistant Physician at the New Jersey State Hospital, Trenton, resigned to engage in general practice.
- DARNELL, DR. B. FL., formerly Assistant Physician at the Northern Indiana Hospital for the Insane, Longcliff, resigned to take a similar position at Pueblo, Colorado.
- DELAEROIX, DR. ARTHUR C., formerly Assistant Physician at the Manhattan State Hospital, West, Ward's Island, New York City, resigned November 1, 1904.
- FARRAR, DR. CLARENCE B., formerly Clinical Assistant at the Sheppard and Enoch Pratt Hospital, Towson, Md., promoted to be Assistant Physician and Director of the Laboratory.
- FITZGERALD, DR. JOHN G., formerly Assistant in Dr. Meyer's Sanitarium, Toronto, appointed Medical Intern at the Buffalo State Hospital, Buffalo, N. Y., October 15, 1904.
- FOX, DR. A. J., formerly Medical Intern at the Manhattan State Hospital, East, Ward's Island, New York City, resigned October 11, 1904.
- FULBRIGHT, DR. W. M., appointed Third Assistant Physician at the North Texas Hospital for the Insane, Terrell.
- FUNKHOUSER, DR. EDGAR, formerly Fourth Assistant Physician at the New Jersey State Hospital, Trenton, promoted to be Third Assistant Physician.
- GAY, DR. C. BERTHAM, formerly Second Assistant Physician at Butler Hospital, Providence, R. I., resigned to enter private practice in Fitchburg, Mass.

- GILL, DR. MARY E., appointed Assistant Physician at the Boston Insane Hospital, Mass.
- GORRILL, DR. GEORGE W., formerly Junior Assistant Physician at the Buffalo State Hospital, Buffalo, N. Y., promoted to be Assistant Physician, November 1, 1904.
- GRIFFITH, DR. L. F., formerly Second Assistant Physician at the Oregon State Insane Asylum, Salem, promoted to be First Assistant Physician.
- HAMILTON, DR. SAMUEL W., appointed Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, March 1, 1905.
- HARP, DR. HENRY J., JR., appointed Clinical Assistant at the Manhattan State Hospital, East, Ward's Island, New York City, October 20, 1904; resigned February 24, 1905, and appointed Medical Intern at the Manhattan State Hospital, West, Ward's Island, New York City.
- HARRIS, DR. HARRY G., formerly Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, resigned March 8, 1905.
- HASSELZINE, DR. H. E., appointed Medical Intern at the Manhattan State Hospital, East, Ward's Island, New York City, January 1, 1905.
- HATHAWAY, DR. GEORGE S., formerly Intern at Butler Hospital, Providence, R. I., promoted to be Second Assistant Physician.
- HAVILAND, DR. F. R., formerly Medical Intern at the Manhattan State Hospital, East, Ward's Island, New York City, promoted to be Junior Physician, November 4, 1904.
- HAWKS, DR. EVERETT M., formerly Medical Intern at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Junior Physician, November 2, 1904. Resigned January 15, 1905.
- HOGG, DR. GARRETT, formerly Assistant Superintendent at the St. Louis Insane Asylum, resigned.
- JENKINS, DR. W. E., appointed Second Assistant Physician at the State Insane Hospital, Asylum, Miss.
- JONES, DR. HENRY A., appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, March 9, 1905.
- KARPAS, DR. MORRIS J., appointed Medical Intern at the Manhattan State Hospital, West, Ward's Island, New York City, November 1, 1904.
- LOLER, DR., appointed Assistant Physician at the St. Louis Insane Asylum.
- MAC IVOR, DR. ANGUS, formerly Intern at the Columbus State Hospital, Ohio, promoted to be Assistant Physician.
- MCGRATH, DR. PATRICK J., formerly Clinical Assistant at the Manhattan State Hospital, Central Islip, resigned December 18, 1904.
- MCMARY, DR. W. D., formerly Third Assistant Physician at the Oregon State Insane Asylum, Salem, promoted to be Second Assistant Physician.
- MCMONAGHTON, DR. P., formerly Third Assistant Physician at the Asylum for the Insane, London, Ontario, Canada, promoted to be Second Assistant Physician.
- MCQUEEN, DR. A. S., formerly Third Assistant Physician at Mt. Pleasant State Hospital, Iowa, resigned.
- MARSHALL, DR. A. T., formerly Assistant Physician at the Boston Insane Hospital, Mass., resigned.
- MATTHEWS, DR. ADOLBERT C., appointed Medical Intern at the Utica State Hospital, Utica, N. Y., July 11, 1904.
- MERRIN, DR. HARRY E., JR., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, January 1, 1905.
- MILLER, DR. H. B., formerly Assistant Physician at the St. Louis Insane Asylum, resigned.
- MONTGOMERY, DR. CHARLES H., appointed Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, December 1, 1904.
- MORSE, DR. ELIZABETH, appointed Assistant Physician at the Eastern Michigan Asylum, Pontiac, January, 1905.

- NEAL, DR. L. B., appointed Third Assistant Physician at the State Insane Hospital, Asylum, Miss.
- O'DAY, DR. SYLVESTER F., appointed Clinical Assistant at the Manhattan State Hospital, East, Ward's Island, New York City, October 15, 1904; resigned January 15, 1905; appointed Medical Internes at the Manhattan State Hospital, West, Ward's Island, New York City, January 17, 1905.
- OSBORN, DR. W. S., formerly Internes at the Cherokee State Hospital, Iowa, promoted to be Third Assistant Physician, January 1, 1905.
- PATON, DR. STEWART, Director of the Laboratory at the Sheppard and Enoch Pratt Hospital, Towson, Md., resigned.
- PALMER, DR. FLOYD, formerly Medical Internes at the Matteawan State Hospital, Matteawan, N. Y., resigned to enter private practice in Glens Falls, N. Y.
- PATTERSON, DR. CHRISTOPHER J., formerly Assistant Physician at the Buffalo State Hospital, Buffalo, N. Y., transferred to the Manhattan State Hospital, West, Ward's Island, New York City, October 31, 1904.
- POFF, DR. C. M., appointed Fourth Assistant Physician at the North Texas Hospital for the Insane, Terrell.
- PRITCHARD, DR. J. ALBERT, appointed Junior Assistant at Willard State Hospital at Willard, N. Y., December 1, 1904.
- RANDOLPH, DR. JAMES H., Clinical Assistant at the Sheppard and Enoch Pratt Hospital, Towson, Md., appointed to be Assistant Physician at the Florida State Hospital for the Insane, Chattahoochee.
- REYNOLDS, DR. MICHAEL T., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, resigned December 27, 1904.
- ROBERT, DR. J. H., appointed Fourth Assistant Physician at the Oregon State Insane Asylum, Salem, November 24, 1903.
- ROGERS, DR. CHAS. B., formerly Assistant Physician at the Ohio State Hospital, Massillon, appointed Junior Physician at the Cincinnati Sanitarium, Ohio, October, 1904.
- ROGERS, DR. CLARKE, formerly First Assistant Physician at the South Dakota Hospital for the Insane, Yankton, resigned March 15, 1904.
- SANDY, DR. WILLIAM C., formerly Assistant Physician at the Westport Sanitarium, Connecticut, appointed Fourth Assistant Physician at the New Jersey State Hospital, Trenton, February 1, 1901, after a competitive examination.
- SHERWOOD, DR. S. W., appointed Assistant Physician at the Westport Sanitarium, Westport, Connecticut.
- SMITH, DR. PHILIP, formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, January 1, 1905.
- SPENCER, DR. ELIZABETH, appointed Assistant Physician at the State Hospital for the Insane, Norristown, Pa.
- SPIVEY, DR. E., formerly Second Assistant Physician at the State Insane Hospital, Asylum, Miss., resigned to enter private practice.
- TAMMISIE, DR. A. N., formerly Fourth Assistant Physician at Oregon State Insane Asylum, Salem, promoted to be Third Assistant Physician.
- TERFLINGER, DR. FRED. W., formerly Internes, Indianapolis Hospital, appointed Assistant Physician at the Northern Indiana Hospital for the Insane, Long-cliff, August 1, 1903.
- THOMAS, DR. A. L., formerly Fourth Assistant Physician at the North Texas Hospital for the Insane, Terrell, resigned to enter private practice.
- THOMPSON, DR. CHARLES W., formerly Assistant Physician at the Michigan Asylum for the Insane at Kalamazoo, appointed Assistant Superintendent of the Upper Peninsula Hospital for the Insane at Newberry, Michigan, April 1, 1905.
- THORNTON, DR. MICHAEL J., formerly Assistant Physician at the Manhattan State Hospital, Central Islip, resigned February 16, 1905.
- TRAIL, DR. C. J., appointed to be Assistant Physician at the South Dakota Hospital for the Insane, Yankton, South Dakota.

- UNTERBERG, DR. H., formerly Assistant Physician at the St. Louis Insane Asylum, promoted to be Assistant Superintendent.
- WASHBURN, DR. JOHN L., formerly Junior Physician at the Manhattan State Hospital, West, Ward's Island, New York City, promoted to be Assistant Physician, February 1, 1905.
- WHEELPLEY, DR., appointed Assistant Physician at the St. Louis Insane Asylum.
- WHERRY, DR. JAMES W., formerly Assistant Physician at the Clarinda State Hospital, Iowa, appointed Medical Superintendent of Glenwood, a home for epileptics, Dansville, N. Y.
- WHITNEY, DR. CLARENCE E., appointed Junior Physician at the Manhattan State Hospital, Central Islip, December 15, 1904.
- WILMOTT, DR. C. BROOKS, appointed Clinical Assistant at the Manhattan State Hospital, West, Ward's Island, New York City, November 4, 1904, resigned March 4, 1905.
- WILLIAMSON, DR. W. T., formerly First Assistant Physician at the Oregon State Insane Asylum, Salem, resigned to become associated with the Crystal Springs Sanitarium at Mount Tabor.
- WILSON, DR. W. T., appointed Third Assistant Physician at the Asylum for the Insane, London, Ontario, Canada.
- WOLLEY, DR. HERBERT C., appointed Medical Intern at Willard State Hospital at Willard, N. Y., October 26, 1904.

Pamphlets Received

Twenty-third Annual Report of the State Hospital for the Insane at Warren, Pennsylvania for the year ending November 30, 1904.

Ninth Annual Report of the Board of Managers of the Springfield State Hospital of the State of Maryland to His Excellency the Governor of Maryland. October 1, 1904.

A Proctological Clinic. John L. Jelks, M. D. Reprinted from Memphis Medical Monthly, February, 1905.

Reports of the Trustees and Superintendent of the Butler Hospital, Presented to the Corporation at its Sixty-first Annual Meeting, January 25, 1905, Providence, R. I.

Seventh Biennial Report of the Trustees, Superintendent and Treasurer of the Illinois Asylum for Insane Criminals at Chester. July 1, 1904.

Effect of Severe Hemorrhage on the Number of Blood Plates in Blood from the Peripheral Circulation of Rabbits. F. L. Richardson, M. D. Reprinted from the Journal of Medical Research, Vol. XIII, No. 1. (New Series, Vol. VIII, No. 1.) pp. 99-103, December 1, 1904.

Report of an Epidemic of Diphtheria in the Willard State Hospital. William L. Russell, M. D. and Thomas W. Salmon, M. D. Reprinted from the Sixteenth Annual Report, October, 1904.

Fifty-sixth Annual Report of the Board of Trustees and Superintendent of the Central Indiana Hospital for Insane for the fiscal year ending October 31, 1904.

Report of the Connecticut Hospital for the Insane for the two years ended September 30, 1904.

Eleventh Biennial Report of the Board of Trustees and Superintendent of the Oregon State Insane Asylum of the State of Oregon to the Twenty-third Legislative Assembly, 1905.

Proper Limitation of Marriage. Maurice C. Ashley, M. D. Reprinted from "The Hahnemannian Monthly," March, 1905.

Official Reports of the Trustees and Officers State Hospital for the Insane, Danville, Pa., October 1, 1902, September 30, 1904.



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